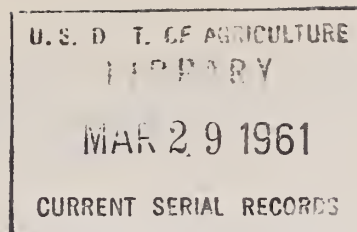


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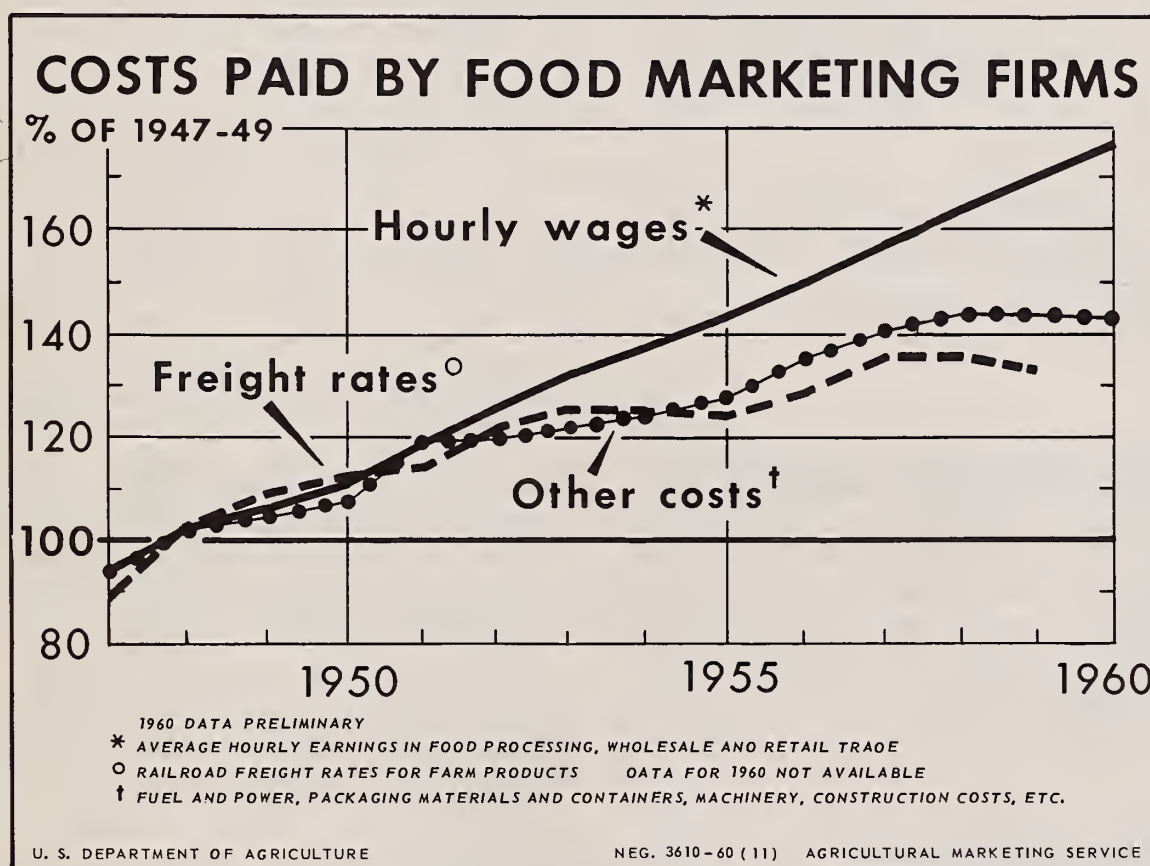
NOV. 18, A. M.

# The MARKETING and TRANSPORTATION SITUATION

MTS-139



In this issue:  
Developments in Dairy Marketing  
and Their Implications  
Recent and Prospective Developments  
in Transportation



Hourly earnings of food marketing employees continued upward in 1960, but improvements in productivity probably kept unit labor costs from rising as much as hourly earnings. Labor costs per unit of product handled have risen about half as much as hourly earnings since 1947-49. The general level of rail freight rates for farm products probably did not change significantly from

1959 to 1960, although rates advanced slightly in October 1960. Selective reductions in rates caused a slight decrease in the general level from 1958 to 1959. Costs of fuel, power, packaging materials, and other goods and services bought by food marketing firms averaged about the same in 1960 as in the previous year. A small increase in food marketing costs is expected again in 1961.

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UNITED STATES DEPARTMENT OF AGRICULTURE

STATISTICAL SUMMARY OF MARKET INFORMATION

Item	Unit or base period	1959		1960			
		Year	July-Sept.	Jan.-Mar.	Apr.-June	July-Sept.	
<u>Farm-to-retail price spreads</u>							
Farm-food market basket: 1/							
Retail cost .....	Dol.	1,040	1,045	1,030	1,056	1,057	
Farm value .....	Dol.	399	396	398	411	405	
Farm-retail spread .....	Dol.	641	649	632	645	652	
Farmer's share of retail cost .....	Pct.	38	38	39	39	38	
Cotton: 2/							
Retail cost .....	Dol.	2.12	2.13	2.15	2.15	----	
Farm value .....	Dol.	.31	.30	.30	.31	----	
Farm-retail spread .....	Dol.	1.81	1.83	1.85	1.84	----	
Farmer's share of retail cost .....	Pct.	15	14	14	14	----	
Cigarettes: 3/							
Retail cost .....	Ct.	27.1	----	----	----	----	
Farm value .....	Ct.	3.84	----	----	----	----	
Federal and State excise taxes .....	Ct.	11.5	----	----	----	----	
Farm-retail spread excluding excise taxes .....	Ct.	11.8	----	----	----	----	
Farmer's share of retail cost .....	Pct.	14	----	----	----	----	
<u>General economic indicators</u>							
Consumers' per capita income and expenditures: 4/							
Disposable personal income .....	Dol.	1,906	1,909	1,941	1,974	1,984	
Expenditures for goods and services .....	Dol.	1,774	1,781	1,808	1,834	1,823	
Expenditures for food .....	Dol.	388	386	390	398	---	
Expenditures for food as percentage of disposable income .....	Pct.	20.4	20.2	20.1	20.2	---	
			1959		1960		
			Year	Sept.	July	Aug.	Sept.
Hourly earnings, production workers, manufacturing: 5/	Dol.	2.22	2.22	2.29	2.27	2.30	
Hourly earnings of food marketing employees 6/.....	Dol.	2.06	2.06	2.14	2.13	2.13	
Retail sales: 7/							
Food stores .....	Mil. dol.	4,307	4,267	4,474	4,526	4,442	
Apparel stores .....	Mil. dol.	1,102	1,111	1,119	1,162	1,122	
Manufacturers' inventories: 7/							
Food and beverage .....	Bil. dol.	4.83	4.83	4.94	4.95	4.95	
Textile .....	Bil. dol.	2.50	2.52	2.69	2.67	2.64	
Tobacco .....	Bil. dol.	1.89	1.93	1.94	1.94	2.01	
Indexes of industrial production: 8/							
Food and beverage manufactures .....	1957=100	106	108	109	109	---	
Textile mill products .....	1957=100	113	114	113	112	---	
Apparel products .....	1957=100	120	121	128	128	---	
Tobacco products .....	1957=100	112	111	111	---	---	
Index of physical volume of farm marketings .....	1947-49=100	128	152	128	143	157	
<u>Price indexes</u>							
Consumer price index 5/ .....	1947-49=100	124.6	125.2	126.6	126.6	126.8	
Wholesale prices of food 5/ .....	1947-49=100	104.4	106.2	106.9	105.4	106.6	
Wholesale prices of cotton products 5/ .....	1947-49=100	91.7	92.6	94.7	94.3	93.4	
Wholesale prices of woolen products 5/ .....	1947-49=100	101.6	104.7	101.8	101.5	101.2	
Prices received by farmers 9/ .....	1947-49=100	88	89	88	86	87	
Prices paid by farmers 9/.....	1947-49=100	115	114	115	114	114	

1/ Average quantities of farm food products purchased per wage-earner or clerical-worker family in 1952. 2/ Data for average family purchases in 1950 of 25 articles of cotton clothing and housefurnishings divided by number of pounds of lint cotton required for their manufacture; see U.S. Dept. Agr. Mktg. Res. Rpt. 277. 3/ Data for package of regular-sized, popular brand cigarettes; farm value is return to farmer for 0.065 lb. of leaf tobacco of cigarette-types; data for fiscal year beginning July 1, 1959. 4/ Seasonally adjusted annual rates, calculated from Dept. of Commerce data. Third quarter 1960 data are from preliminary estimates by the Council of Economic Advisers. 5/ Dept. Labor. 6/ Weighted composite earnings in food processing, wholesale trade, retail food stores, calculated from data of Dept. Labor. 7/ Seasonally adjusted, Dept. Commerce. Annual data for 1959 are on an average monthly basis. 8/ Seasonally adjusted, Board of Governors of Federal Reserve System. 9/ Converted from 1910-14 base.



# THE MARKETING AND TRANSPORTATION SITUATION

Approved by the Outlook and Situation Board, November 10, 1960

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## SUMMARY

Charges for marketing farm food products are expected to go up again next year, but the increase likely will be small. Marketing charges for farm food products increased more slowly in 1959 and 1960 than in the preceding 2 years. The average for this year will be about 1 percent higher than that for 1959. Labor and other costs incurred by marketing firms in 1961 probably will not increase much from present levels. Continued rises in wage rates have been at least partly offset by improvements in productivity. Prices of fuel, packaging materials, and many other items marketing firms buy have not increased this year as in most postwar years. The general level of rail freight rates on agricultural products probably will average about the same in 1960 as in 1959. Truck rates, however, rose this year, and a relatively small increase in rail freight rates went into effect October 24, 1960.

The total farm value or payment farmers receive for farm products equivalent to the products in the farm food market basket probably will average a little less in 1961

than this year. Lower average prices are in prospect for cattle and chickens. But prices of hogs and eggs in the months ahead are expected to be higher than a year earlier, but may fall below later in 1961. Farmers' prices for food products will average about the same this year as in 1959.

Retail prices of farm food products originating on farms may be about the same next year as in 1960. The anticipated small decline in the total farm value of the market basket probably will be offset by rising marketing charges. Retail prices have been a little higher this year than last, although prices received by farmers were about the same in both years. Retail prices of farm foods this year will average about 2 percent less than the record established in 1958.

The farmer's share of the consumer's farm food dollar is expected to average 38 cents in 1961, the same as in 1960, or possibly a cent lower.

The volume of farm products marketed this year may surpass last year's record. Marketings of farm products next year probably will rise further if the weather is average or better. Production of manufactured food products, apparel, and tobacco products in the first 8 months of 1960 was slightly larger than in the same period last year, but the output of textile mill products dropped. Dollar sales of retail food stores in the first 8 months of 1960 were up about 4 percent from the same period of 1959. Sales of nonfood articles have accounted for an increasing proportion of retail food store sales in recent years.

Disposable income per person, which increased this year, is expected to be well maintained in 1961. Consumers spent about the same proportion of their income for food as last year, and the percentage spent for clothing increased a little.

#### Special Articles

Technological changes in recent years have greatly affected all stages of the dairy industry--from production of milk to processing and distribution of consumer products. Introduction of labor-saving equipment and of new methods of handling milk has been a factor increasing the average size of dairy herds. The number of processing plants has declined sharply, and volume per plant has increased. Plants processing farm-separated cream are fast disappearing. Grade A milk is increasing relative to the total supply. Technological changes also have been a big factor in increasing price competition in marketing fluid milk, which is now distributed over much larger sales areas than formerly, bringing producers and plants in competition over a wider area. New products have appeared that may greatly affect the market for fluid milk. (See pp. 18-25.)

Another special article in this issue covers developments affecting modes of transport that are not so well known as

rail and truck transportation. Shipments of farm products by these means--barge lines, van container service on ships (fishyback), and airfreight--are small but increasing.

Traffic in agricultural products on inland waterways increased from 4.5 million tons in 1948 to 12.0 million in 1958. This growth was stimulated by the use of diesel-powered towboats and improvements in waterways. Further improvements in waterways and growth in traffic are in prospect.

Van containers loaded with agricultural commodities at inland points are mounted on tractor-drawn trailer chassis and hauled to the port of embarkation where they are loaded on a ship. When the ship arrives at its destination the vans are removed and placed on tractor-trailer chassis or flatcars for movement to inland points. Shipment of agricultural commodities in ship-carried van containers has been most extensive between the continental United States and Alaska, Hawaii, Puerto Rico, and other Caribbean islands, and between ports on the Atlantic and Gulf coasts. Van containership service provides shippers of agricultural products with a safe, economical, and flexible means of transportation. But development of this service involves large capital investments and problems of labor relations, vessel design, and standardization of containers.

Airfreight provides a valuable service in the shipment of cut flowers and a few perishable food products for which rapid movement over long distances is particularly needed. Because of the speed in transit, risks of spoilage and of adverse price changes are less compared with shipments by surface carriers, and less packaging is required. Costs have been the principal deterrence to growth in volume. Prospects are good for airfreight rates to become more competitive than at present, or formerly, with rates of surface carriers. (See pp. 26-34.)



## FARM-RETAIL SPREADS FOR FARM FOODS--RECENT TRENDS AND OUTLOOK

### Marketing Charges and Farm Value Higher than a Year Earlier

Marketing charges as measured by the farm-retail spread of the farm food "market basket" averaged 1 percent higher in the third quarter this year than in the same quarter of 1959 (table 11, p. 37). <sup>1/</sup> Decreases in the poultry and eggs group and the fats and oils group were more than offset by increases in other groups.

The increase in the market basket spread was accompanied by a 2-percent increase in the farm value over a year ago (table 10, p. 36). <sup>2/</sup> Most of this increase was in the poultry and eggs and the fruits and vegetables groups. Fats and oils made a large percentage increase. The farm value of the market basket is expected

to average \$400 in 1960, about the same as in 1959 (table 1). Since 1954, the annual average farm value has fluctuated between \$390 in 1956 and \$430 in 1958.

Increases in the spread and the farm value led to a 1-percent increase in the total retail cost of the market basket. <sup>3/</sup> The meat products and fats and oils groups were the only ones for which retail costs declined. During the 5 years preceding 1960 the annual average retail cost of the market basket ranged between a low of \$969 in 1955 and a high of \$1,064 in 1958. An annual average of \$1,045 is forecast for 1960.

### Farm Value Down, Marketing Charge Up From Previous Quarter

The farm value of the market basket declined 1 percent from the second to the third quarter this year. Nearly all of this decrease was in the meat products group. Changes in other groups about offset each other.

The market basket retail cost was about the same in the quarter just ended as in the previous quarter. Most of the groups changed little, but the poultry and eggs

group was 2 percent higher and the fruits and vegetables group was 4 percent lower.

In the third quarter the farm-retail spread averaged \$652 (annual rate), 1 percent more than in preceding quarter. A 7-percent rise in the marketing margin for meat products and moderate increases for several other groups were partly offset by a decrease for fruits and vegetables.

---

<sup>1/</sup> The "market basket" contains the average quantities of farm-produced food products purchased for consumption at home per urban wage-earner and clerical-worker family in 1952. Additional information concerning the contents of the market basket and methods of estimating market-basket data are given in "The Farm-Retail Spreads for Food Products," U. S. Dept. Agr., Misc. Pub. 741, 1957. The farm-retail spread is the difference between the retail price paid by the consumer and the payment to the farmer for equivalent farm products. It is an estimate of the charges made by marketing agencies for assembling, processing, transporting, and distributing farm food products.

<sup>2/</sup> The farm value is the payment to farmers for the farm products equivalent to foods in the market basket.

<sup>3/</sup> The retail cost of the market basket of farm foods is less than the retail cost of all foods bought per family. The market basket of farm foods does not include imported foods, fishery products, and other foods of nonfarm origin, or costs of meals purchased in public eating places.

Table 1.--The farm food market basket: Retail cost, farm value, farm-retail spread, and farmer's share of retail cost, 1947-60 <sup>1/</sup>

Year and month	Retail cost <sup>2/</sup>	Farm value <sup>3/</sup>	Farm-retail spread	Farmer's share
	Dollars	Dollars	Dollars	Percent
1947-49 average .....	940	466	474	50
1950 .....	920	432	488	47
1951 .....	1,024	497	527	49
1952 .....	1,034	482	552	47
1953 .....	1,003	445	558	44
1954 .....	986	421	565	43
1955 .....	969	395	574	41
1956 .....	972	390	582	40
1957 .....	1,007	401	606	40
1958 .....	1,064	430	634	40
1959 .....	1,040	399	641	38
1960 <sup>4/</sup> .....	1,045	400	645	38
<u>1959</u>				
January .....	1,048	411	637	39
February .....	1,042	406	636	39
March .....	1,036	407	629	39
April .....	1,037	407	630	39
May .....	1,035	400	635	39
June .....	1,050	400	650	38
July .....	1,052	395	657	38
August .....	1,038	395	643	38
September .....	1,044	399	645	38
October .....	1,037	390	647	38
November .....	1,030	384	646	37
December .....	1,032	381	651	37
<u>1960</u>				
January .....	1,030	387	643	38
February .....	1,028	394	634	38
March .....	1,032	412	620	40
April .....	1,053	416	637	40
May .....	1,054	411	643	39
June .....	1,060	406	654	38
July .....	1,063	409	654	38
August .....	1,055	402	653	38
September .....	1,054	404	650	38

<sup>1/</sup> The farmer's share and index numbers of the retail cost, farm value, and farm-retail spread for the years 1913-56 are published in "Farm-Retail Spreads for Food Products," U.S. Dept. Agr. Misc. Pub. 741, 1957.

<sup>2/</sup> Retail cost of average quantities of farm foods purchased per urban wage-earner and clerical-worker family in 1952, calculated from retail prices collected by the Bur. Labor Statistics.

<sup>3/</sup> Payment to farmers for equivalent quantities of farm produce minus imputed value of byproducts obtained in processing.

<sup>4/</sup> Preliminary estimates.

: Current data are given in the Statistical Summary, :  
: a monthly publication of the Agricultural Marketing Service.: :



### Farmer's Share Down From Last Quarter But Unchanged From Year Ago

The farmer's share of the consumer's dollar spent for farm foods averaged 38 cents in the July-September quarter. This was 1 cent lower than in the April-June quarter. In the third quarter last year it

also averaged 38 cents. The farmer's share probably will average 38 cents for all of 1960. During 1955-59 the annual average farmer's share declined from 41 cents in 1955 to 38 cents in 1959 (table 1).

### Farm Value of Beef Lower, Pork Higher

The farm value of Choice grade beef was 8 percent lower in the third quarter of 1960 than in the same quarter of 1959 (table 10, p.36). The retail price was down 3 percent and the farm-retail spread was up 5 percent. More of the increase in the spread was in the wholesale-retail segment than in the live-wholesale segment, though the percentage change was larger for the live-wholesale segment (table 2). Compared with the second quarter this year, the farm value in the quarter just ended was 7 percent lower, the retail price was 2 percent lower, and the spread was 7 percent wider.

These sharp changes in price spreads for beef probably reflect the tendency for adjustments in retail and wholesale prices of beef to lag behind large cyclical changes in the direction of cattle prices. Under these circumstances rapid changes in cattle prices cause wide swings in price spreads in the opposite direction. In the most recent experience the farm value of Choice grade beef declined 6 percent from the third quarter of 1954 to the third quarter of 1955. This drop was accom-

panied by an increase of 6 percent in the farm-retail price spread. However, in some earlier periods when farm prices for cattle have risen sharply, price spreads have narrowed. For example, when the farm value of Choice grade beef increased 11 percent from the third quarter of 1955 to the third quarter of 1956, the farm-retail price spread declined 12 percent.

For retail cuts of pork, the farm value rose 15 percent or 4.1 cents per retail pound from the July-September period last year to the quarter just ended. The retail price increased 1.8 cents. The farm-retail spread decreased 2.3 cents. The live-wholesale spread decreased 14 percent and the wholesale-retail spread 9 percent (table 3).

From the second to the third quarter this year the farm-retail spread for pork rose 7 percent, while the farm value increased 4 percent and retail price 5 percent. The wholesale-retail segment accounted for most of the increase in the farm-retail spread.

### Outlook for 1961

Charges for marketing farm food products are likely to rise again in 1961, but the increase is expected to be small. Prices of supplies, equipment, and other items bought by marketing firms have been more stable this year than in most postwar years and large changes in their general level are not now in prospect. (See pp.9-16.) Further gains in wages may be largely offset by improvements in productivity.

Transportation costs probably will average a little higher next year.

The annual average farm-retail spread of the farm food market basket has risen each year since 1950, but rises since 1958 have been relatively moderate. After rising sharply during the Korean War, the rate of increase slowed. From 1952 to 1956 the market-basket spread climbed

Table 2.--Beef (Choice grade): Live-wholesale and wholesale-retail spreads, by quarters, 1959-60 <sup>1/</sup>

Quarter	Live-wholesale (per 100 pounds live weight)					Wholesale-retail (per 100 pounds carcass weight)		
	Price of steers 2/	Wholesale value			Spread	Wholesale price 4/	Retail value 5/	Spread
		Carcass 3/	Byproducts	Total				
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1959								
Jan.-Mar. . .	27.96	28.04	2.41	30.45	2.49	47.53	66.40	18.87
Apr.-June . .	28.83	28.30	2.90	31.20	2.37	47.96	66.72	18.76
July-Sept. . .	27.62	27.32	2.82	30.14	2.52	46.31	66.08	19.77
Oct.-Dec. . .	26.06	26.32	2.29	28.61	2.55	44.61	65.68	21.07
Average . . .	27.62	27.50	2.60	30.10	2.48	46.60	66.24	19.64
1960								
Jan.-Mar. . .	26.53	27.01	2.19	29.20	2.67	45.78	64.96	19.18
Apr.-June . .	26.86	27.16	2.33	29.49	2.63	46.03	<sup>6/</sup> 65.36	<sup>6/</sup> 19.33
July-Sept. . .	25.01	25.60	2.25	27.85	2.84	43.39	64.08	20.69

<sup>1/</sup> Quarterly data for 1949-55 are published in "Beef Marketing Margins and Costs," U. S. Dept. Agr. Misc. Pub. 710, Feb. 1956, tables 1 and 3.

<sup>2/</sup> Weighted average of prices at 20 leading public stockyards.

<sup>3/</sup> Wholesale carcass value is 59 percent of average wholesale price of 100 pounds of Choice grade carcass beef.

<sup>4/</sup> Weighted average of prices of Choice grade carcass beef in New York, Chicago, Los Angeles, San Francisco, and Seattle.

<sup>5/</sup> Calculated from average retail prices of beef cuts in urban areas, published by Bur. Labor Statistics. The retail value per 100 pounds carcass weight is 80 percent of average retail cost of 100 pounds of retail cuts, because about 20 pounds of a 100-pound carcass is fat, bone, and trim which is sold by retailers at nominal prices.

<sup>6/</sup> Revised.

Table 3.--Pork: Live-wholesale and wholesale-retail spreads, by quarters, 1959-60 <sup>1/</sup>

Quarter	Live-wholesale (per 100 pounds live weight)			Wholesale-retail (per 100 pounds major cuts)		
	Price of hogs 2/	Wholesale value 3/	Spread	Wholesale value 4/	Retail value 5/	Spread
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1959						
Jan.-Mar. . .	16.66	22.17	5.51	41.61	58.86	17.25
Apr.-June . .	16.85	21.96	5.11	41.71	58.01	16.30
July-Sept. . .	14.47	20.54	6.07	39.54	56.97	17.43
Oct.-Dec. . .	12.88	19.01	6.13	36.37	53.52	17.15
Average . . .	15.22	20.92	5.70	39.81	56.84	17.03
1960						
Jan.-Mar. . .	14.27	19.68	5.41	38.02	52.05	14.03
Apr.-June . .	16.94	21.82	4.88	41.79	<sup>6/</sup> 55.96	<sup>6/</sup> 14.17
July-Sept. . .	17.40	22.65	5.25	42.96	58.88	15.92

<sup>1/</sup> Quarterly data for 1949-55 are published in "Pork Marketing Margins and Costs," U. S. Dept. Agr. Misc. Pub. 711, Apr. 1956, tables 1 and 2.

<sup>2/</sup> Average price of 200-220 pound barrows and gilts, Chicago.

<sup>3/</sup> Wholesale value at Chicago of 71 pounds of pork and lard obtained from 100 pounds of live hog.

<sup>4/</sup> Wholesale value of 100 pounds of major pork cuts at Chicago computed from Livestock Market News and National Provisioner price quotations of individual cuts.

<sup>5/</sup> Calculated from average retail prices of major pork cuts in urban areas, published by Bur. Labor Statistics.

<sup>6/</sup> Revised.



about 1 percent per year, but in 1957 and 1958 it jumped a total of 9 percent. After 1958, the spread increased more slowly, and in 1960 averaged less than 2 percent higher than in 1958.

The total farm value of the farm food market basket probably will average a little lower in 1961 than in 1960. Larger marketings are expected to result in some further decline in cattle prices. Prices of hogs may continue above those of a year earlier well into 1961, but the expected upturn in hog production may result in greater than seasonal price declines later in the year. Egg prices are likely to be well maintained through the early months of 1961, but may fall below 1960 levels later. Prices for broilers probably will

average lower. The farm value of the dairy products group in the third quarter this year was higher than last year, and in the coming months it may continue above year-earlier levels. The support price for 1961 crop wheat will be as high as that for the 1960 crop.

Little change is in prospect for the retail cost of the farm food market basket. The farm value is likely to decline slightly, but marketing charges will rise a little.

With only minor changes in farm value and marketing charges in prospect, the farmer's share of the consumer's farm food dollar in 1961 is expected to average 38 cents, the same as forecast for this year, or possibly a cent less.

## COSTS AND PROFITS IN MARKETING FARM PRODUCTS

### Labor Costs

Hourly earnings of employees of firms marketing farm products continued to rise in 1960. Costs of fringe benefits also increased. Further increases are likely in 1961. But improvements in output per man-hour are expected to keep labor costs per unit of output from rising as much as hourly earnings. Direct labor costs accounted for about half of the charges for marketing farm foods in 1959, and they make up a large part of the marketing charges for textiles and other products fabricated from farm-produced raw materials.

Employees of food processing, wholesaling, and retailing firms earned an average of \$2.13 per hour in September of this year--4 percent more than a year earlier (table 4). <sup>1/</sup> This percentage increase was the same as that for the year ended September 1959. But labor costs have not

risen as much as wages. During the 5 years 1955-59 hourly earnings (including the cost of fringe benefits) of all workers engaged in marketing farm food products increased at an average annual rate of 4 percent, <sup>2/</sup> while unit labor costs increased 2 percent. But unit labor costs in food marketing have increased in all years except 2 since 1939, indicating that wages have increased faster than productivity.

Earnings of employees in the tobacco manufacturing industry averaged \$1.57 per hour in September, up 1 percent from a year earlier. During the 12 months ended in September this year, average hourly earnings rose 2 percent in the textile mill products industry, and 3 percent in the apparel and finished textile products industry.

<sup>1/</sup> Average hourly earnings are calculated by dividing the total payroll by the number of hours worked. Thus, changes in these averages reflect variations in the proportions of employees in higher-paid and lower-paid jobs and premium pay for overtime and late-shift work, as well as changes in wage rates.

<sup>2/</sup> This percentage increase related to hourly earnings of all workers engaged in marketing food, including imputed earnings of active proprietors and unpaid family workers and workers engaged in the transportation of food products. For that reason this percentage increase differs slightly from the corresponding percentage gain in hourly earnings of food marketing employees shown in table 4.

Table 4.--Average hourly earnings of employees of firms marketing food, tobacco and textile products, 1939 and 1950-60

Year and month	Food : marketing : 1/	Tobacco : manufacturers : 2/	Textile-mill : product : 2/	Apparel and : other : finished : textile : products 2/	Retail : apparel : and : accessories : stores 2/
	Dollars	Dollars	Dollars	Dollars	Dollars
1939 .....	0.60	<u>3/</u> 0.48	<u>3/</u> 0.46	---	0.56
1950 .....	1.34	1.07	1.24	<u>3/</u> 1.20	1.12
1951 .....	1.43	1.13	1.33	1.29	1.17
1952 .....	1.51	1.17	1.36	1.30	1.22
1953 .....	1.60	1.24	1.37	1.33	1.27
1954 .....	1.66	1.30	1.36	1.35	1.31
1955 .....	1.73	1.33	1.39	1.35	1.33
1956 .....	1.81	1.45	1.45	1.45	1.37
1957 .....	1.90	1.53	1.50	1.49	1.42
1958 .....	1.98	1.60	1.51	1.51	1.46
1959 .....	2.06	1.66	1.57	1.52	1.50
1959					
Jan. ....	2.03	1.64	1.53	1.53	1.51
Feb. ....	2.04	1.65	1.53	1.53	1.49
Mar. ....	2.05	1.69	1.57	1.53	1.48
Apr. ....	2.05	1.72	1.57	1.52	1.49
May ....	2.05	1.74	1.58	1.52	1.51
June ....	2.05	1.73	1.58	1.50	1.51
July ....	2.06	1.76	1.58	1.51	1.50
Aug. ....	2.04	1.62	1.59	1.52	1.48
Sept. ....	2.06	1.55	1.59	1.53	1.52
Oct. ....	2.07	1.59	1.59	1.52	1.51
Nov. ....	2.09	1.69	1.59	1.53	1.52
Dec. ....	2.10	1.70	1.59	1.53	1.52
1960					
Jan. ....	2.12	1.72	1.60	1.54	1.53
Feb. ....	2.12	1.70	1.60	1.55	1.51
Mar. ....	2.13	1.72	1.62	1.56	1.50
Apr. ....	2.13	1.80	1.61	1.53	1.55
May ....	2.14	1.80	1.63	1.54	1.53
June ....	2.14	1.82	1.63	1.54	1.54
July ....	2.14	1.82	1.62	1.55	1.52
Aug. ....	2.13	1.71	1.62	1.57	1.50
Sept. ....	2.13	1.57	1.62	1.58	1.53

1/ Weighted composite earnings in food processing and wholesale and retail food trades calculated by the Agr. Mktg. Serv. from data of the U.S. Dept. of Labor. 2/ U.S. Dept. of Labor. 3/ Not strictly comparable with data for later years.



Transportation Costs 1/

Transportation costs for agricultural products probably will average a little higher in 1961 than in 1960. A general increase in rail freight rates, effective October 24, 1960, and advances in rates of truck and barge lines during the latter part of the year raised the level of transportation costs. But selective re-

ductions in rail freight rates in 1961 may offset, at least in part, increases made this year.

The annual index of rail freight rates on farm products averaged slightly lower in 1959 than in 1958 (table 5). This was the second and largest decrease in the annual

Table 5.--Rail freight rate indexes for selected agricultural commodities, 1954-59 1/

(1947-49 = 100)						
Year and month	Livestock	Meat	Fruits and vegetables	Wheat	Cotton	Combined index
1954 . . . . .	130	130	117	127	128	125
1955 . . . . .	130	130	117	127	125	124
1956 . . . . .	136	136	121	133	120	129
1957 . . . . .	146	144	126	140	119	136
1958 . . . . .	154	136	123	144	119	136
1959 . . . . .	153	123	119	142	118	133
1959						
January . . .	154	123	120	142	118	133
February . .	154	123	120	142	118	133
March . . .	154	123	119	142	118	133
April . . . .	154	123	119	142	118	133
May . . . . .	154	123	119	142	118	133
June . . . . .	154	123	119	142	118	133
July . . . . .	153	123	119	142	118	133
August . . .	152	123	119	142	118	132
September .	152	123	119	142	118	132
October . . .	152	123	119	142	118	132
November . .	152	123	119	142	118	132
December . .	152	123	119	142	118	132

1/ Indexes shown here are based on actual rate levels, and rises reflect rate increases actually taken by the railroads. Increases were somewhat below those authorized by the Interstate Commerce Commission. The latter increases appear in an ICC statistical series.

For index numbers 1913-51 and methodology see Methods Used in Computing Rail Freight-Rate Indexes for Farm Products, by Robert B. Reese, U. S. Dept. Agr., AMS-209, issued Oct. 1953, reissued Sept. 1957. For annual indexes 1952-53 and monthly indexes 1956-58, see The Marketing and Transportation Situation, Nov. 1958, tables 9 and 10, pp. 41 and 42, and Oct. 1959, table 5, p. 12.

1/ Prepared by Mildred DeWolfe, Transportation and Facilities Research Division, Agricultural Marketing Service.

index since World War II. (See cover chart.) The adoption of "incentive" rates by railroads in order to compete more effectively with truck carriers caused the decrease in the index in 1959. The incentive rates provided for lower rates per 100 pounds for carlots loaded to heavier minimum weights. Heavier loading of cars caused a marked reduction in indexes of rates for meat and fresh fruits and vegetables.

The index of rail freight rates for 1960 is not expected to show a significant change from 1959. The general increase in rates effective October 24 was too late in the year to have much effect on the annual average. Also incentive rate reductions introduced by the railroads in 1959 and earlier in 1960 will tend to decrease the 1960 annual index.

#### Recent Rate Increases

Railroads.--In September of this year, the railroads filed with the Interstate Commerce Commission tariffs providing for increases in rates and charges to become effective October 24, 1960. These tariffs contained increased rates and charges on practically all commodities and new or increased charges for certain services. The railroads asked for the smallest rate increases, on the average, that they have requested on a national basis since World War II. All increases are in dollars and cents and not percentages of existing rates. After 2 days of oral argument, the Interstate Commerce Commission issued an order dated October 20, 1960. Most requested increases were permitted to go into effect on October 24, 1960, but the railroads were required to accept smaller increases on some items. Other requested increases were suspended until May 23, 1961, to permit further investigation by the ICC. Authorized increases relating to agricultural products are as follows:

1. Rates published in cents per 100 pounds: All rates of 65 cents or less are increased 0.5 cent; all those higher than

65 cents are increased 1 cent. For rates consisting of two or more factors combined, the increase is to be applied to the sum of the factors.

2. Rates published per ton; net or gross: Rates not exceeding \$13 are increased 10 cents per net ton or 11 cents per gross ton; rates exceeding \$13, increased 20 cents per net ton or 22 cents per gross ton.
3. Rates published per car: Increased \$3 per car, except on fresh or green fruits and vegetables (not cold packed or frozen) which are increased \$2 per car.
4. Rates on freight in trailers or containers loaded on flatcars: Rates per 100 pounds not exceeding 65 cents are increased 0.5 cent; those higher than 65 cents are increased 1 cent. Rates published in dollars per trailer not exceeding \$260 are increased \$2; all higher than \$260 go up \$4. Rates published in dollars per car and not exceeding \$520 are increased \$4; all those higher than \$520 advance \$8.
5. Rates on milk and cream in passenger or freight service are increased 0.5 cent per gallon.
6. Rates on export, import, or coastwise, and intercoastal freight are raised 1 cent per 100 pounds or 20 cents per ton in addition to all other increases, but this provision does not apply to grain, soybeans, and flaxseed shipped in bulk and handled through elevators or other bulk facilities and to phosphate rock.

The tariffs further provided for increases in charges for split delivery, transit services, diversion and reconsignment, installation of grain doors, feeding and watering and other services for livestock, and for switching.

According to press reports most of the western railroads have decided not to put into effect the authorized rate increase on some grain shipments.



Motor Carriers.--Motortruck common carriers in several areas of the country increased some of their rates in 1960. Most shipments of unprocessed farm products, however, are carried by carriers whose rates are exempt from ICC regulation. No data are available concerning changes in their rates.

Barge Lines.--Barge lines that are members of the Waterways Freight Bureau filed rate and charge increases with the ICC to become effective November 1, 1960. These lines, which operate in the midcontinent and Gulf areas, haul about 95 percent of all barge common carrier tonnage moved in their areas. With certain exceptions, rates on all commodities are increased 20 cents per ton, net or gross. The principal exceptions made for products important to agriculture are:

1. Grain and grain products in packages--

10 cents per ton.

2. Sugar in bulk or in packages--10 cents per ton.

3. Phosphate rock, crude in bulk--6 cents per ton.

A large share of agricultural commodities handled by barge, however, move under bulk rates exempt from ICC regulation.

Grain is the principal agricultural product moved by barge on the Mississippi. Reductions of 10 to 15 percent were made in bulk grain rates from upper midwest points to New Orleans in the spring of 1960. The keen competition from other types of carriers seems likely to exert enough downward pressure on bulk grain rates to prevent any increase in the near future.

#### Other Costs

Prices of items that marketing firms buy generally did not change much in either 1960 or 1959 (table 6). For the second consecutive year prices of fuel, power, and lighting materials averaged about the same as in the preceding year. Containers and packaging materials, except metal containers, have been the same or cheaper this year than last. Prices of machinery and equipment and construction costs increased slightly this year.

Interest rates charged by banks on short-term loans to business declined slightly in the third quarter this year. Rates in 19 large cities in various sections of the country averaged 4.97 percent in September this year, compared with 5.27

percent a year earlier. During much of 1959 and 1960 interest rates were at the highest levels since the early 1930's.

State and local taxes and rents continued to rise in many areas of the country in 1960. These items have been rising for several years and the trend is not expected to be reversed in 1961.

Rates charged by newspapers and magazines for advertising have risen substantially in recent years. In addition to paying higher rates, many companies are evidently increasing the volume of advertising, so that advertising expenditures are representing a larger proportion of total costs.

#### Profits

Total profits (after taxes) of corporations processing food were about 1 percent higher in the first half of this year than in the same period last year, accord-

ing to a report by the Federal Trade Commission and the Securities and Exchange Commission. Profits of textile mills also were up in the first half of

1960, but profits of makers of apparel were down from a year ago.

Profits of leading food chains in the first 6 months of 1960 were up slightly from the same period of 1959.

The ratio of profits after taxes to sales for leading food processors rose from 2.2 percent in 1958 to 2.4 percent in 1959 (table 7). This compares with the 1947-49 average of 2.3 percent. Profits (after taxes) as a percentage of stockholders' equity also were higher in 1959, reaching the highest level since 1950.

For 5 leading wholesale food distributors, profit ratios declined from 1958 to 1959. After-tax profits ratios for these

companies in 1958 were the highest since 1950.

The 8 leading retail food chains maintained their ratio of profits to sales for the second consecutive year. Profits as a percentage of stockholders' equity, however, were down in 1959.

Profits (after taxes) of 5 leading tobacco manufacturers as a percent of sales and of stockholders' equity increased in 1959 for the seventh consecutive year.

Firms that manufacture textile products and apparel generally experienced their best profit ratios since 1951 (table 8). The sharp increase for these firms in 1959 halted a 2-year decline in their ratios.

Table 6.--Costs of equipment and supplies bought by marketing firms, 1953-60

(1947-49 = 100)								
Item	: 1953	: 1954	: 1955	: 1956	: 1957	: 1958	: 1959	: 1960
	:	:	:	:	:	:	:	: 1/ 1/
Fuel, power, and lighting materials . . . . .	: 109.5	108.1	107.9	111.2	117.2	112.7	112.7	112.6
Machinery and equipment . . . . .	: 125.3	128.2	134.0	147.5	157.6	160.3	165.3	167.4
Construction costs . . . . .	: 122.0	122.0	125.0	132.0	137.0	139.0	141.0	143.0
Waxing paper . . . . .	: 118.0	117.9	124.1	135.1	137.6	137.0	137.0	137.0
Grocery bags . . . . .	: 117.0	108.1	109.9	141.4	151.7	156.1	154.4	153.4
Container board (paper) . . . . .	: 117.2	119.9	119.9	123.7	125.0	125.0	125.0	125.0
Glass containers . . . . .	: 134.4	141.1	142.9	150.4	158.9	167.8	167.8	164.6
Metal containers . . . . .	: 127.3	130.6	132.9	141.6	151.2	155.7	153.8	154.2
Motortruck prices . . . . .	: 115.0	113.8	118.0	127.2	134.0	139.8	142.4	139.6
Gasoline . . . . .	: 120.4	114.8	114.6	118.0	123.6	115.4	115.0	113.7
Lubricating oils . . . . .	: 83.7	71.1	73.3	87.4	97.6	91.3	90.5	98.8
Tires and tubes . . . . .	: 127.2	130.6	144.9	152.3	150.9	152.4	144.0	138.3

1/ First 8 months.

Index published by the Bureau of Labor Statistics except index of construction costs which is published by the Department of Commerce.



Table 7.--Net profits (before and after taxes on income) as a percentage of stockholders' equity and as a percentage of sales, leading food and tobacco companies, average 1935-39 and 1947-49, annual 1950-59

Profits as percentage of stockholders' equity <sup>1/</sup>								
Year	49		5		8		5	
	food processing:		wholesale food:		retail food:		tobacco	
	companies		distributors		chains		companies	
	Before	After	Before	After	Before	After	Before	After
	taxes	taxes	taxes	taxes	taxes	taxes	taxes	taxes
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Average:								
1935-39 ...	8.8	7.2	---	---	10.2	8.4	17.3	13.9
1947-49 ...	19.4	11.6	25.2	15.5	27.8	16.5	23.8	14.3
1950 .....	21.0	11.5	17.2	10.0	26.7	14.0	25.8	13.5
1951 .....	18.0	8.5	17.6	9.4	21.1	10.1	24.8	9.9
1952 .....	17.6	8.2	12.4	5.8	22.5	10.0	23.0	9.5
1953 .....	19.9	9.2	14.8	7.6	25.1	11.4	25.6	10.1
1954 .....	18.4	8.9	13.8	7.5	23.3	11.3	23.1	10.6
1955 .....	20.3	10.2	12.6	6.7	23.4	11.2	26.2	12.0
1956 .....	20.1	10.3	15.0	7.6	27.5	13.1	26.2	12.1
1957 .....	18.8	9.6	15.4	7.6	29.9	14.2	27.3	12.8
1958 .....	20.6	10.2	18.4	9.7	29.2	13.8	31.6	14.6
1959 .....	21.1	10.5	15.9	8.1	27.0	12.9	32.0	14.8
Profits as percentage of sales								
	45		5		8		5	
	food processing:		wholesale food:		retail food:		tobacco	
	companies		distributors		chains		companies	
	Before	After	Before	After	Before	After	Before	After
	taxes	taxes	taxes	taxes	taxes	taxes	taxes	taxes
Average:								
1935-39 ...	3.6	3.0	---	---	1.8	1.5	11.3	9.1
1947-49 ...	3.9	2.3	2.7	1.7	2.3	1.4	8.2	4.9
1950 .....	4.6	2.5	2.1	1.2	2.4	1.3	9.8	5.1
1951 .....	3.6	1.7	2.1	1.1	1.9	.9	9.4	3.8
1952 .....	3.5	1.6	1.6	.7	1.9	.8	8.2	3.4
1953 .....	4.0	1.9	2.0	1.0	2.1	1.0	9.7	3.8
1954 .....	3.8	1.9	1.9	1.0	2.0	1.0	9.4	4.3
1955 .....	4.4	2.2	1.7	.9	2.1	1.0	10.8	4.9
1956 .....	4.3	2.2	1.9	1.0	2.4	1.1	10.8	5.0
1957 .....	4.1	2.1	1.8	.9	2.6	1.2	11.0	5.2
1958 .....	4.5	2.2	2.3	1.2	2.6	1.2	12.3	5.7
1959 .....	4.8	2.4	2.1	1.1	2.6	1.2	12.5	5.8

<sup>1/</sup> Ratio of net profits to average of stockholders' equity at the beginning and end of the year. Stockholders' equity is excess of total balance sheet assets over liabilities.

Compiled from financial statements reported in Moody's Industrials.

Table 8.--Net profits (before and after taxes on income) as percentages of stockholders' equity and sales, corporations manufacturing textile-mill products and apparel and finished textiles, annual 1951-59

Year	Profits as percentage of--							
	Stockholders' equity				Sales			
	Textile-mill products		Apparel and other finished products		Textile-mill products		Apparel and other finished products	
	Before taxes	After taxes	Before taxes	After taxes	Before taxes	After taxes	Before taxes	After taxes
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
1951 . . . . .	19.8	7.1	9.9	3.0	7.9	2.9	2.1	0.6
1952 . . . . .	9.7	3.6	10.9	4.5	4.2	1.6	2.4	1.0
1953 . . . . .	9.8	3.9	11.3	5.0	4.7	1.9	2.6	1.2
1954 . . . . .	5.2	1.5	10.0	4.5	2.7	.8	2.3	1.1
1955 . . . . .	10.9	4.8	12.8	6.0	5.1	2.2	2.8	1.3
1956 . . . . .	11.8	5.8	16.5	8.1	5.3	2.6	3.3	1.6
1957 . . . . .	9.0	4.2	13.2	6.3	4.1	1.9	2.7	1.3
1958 . . . . .	7.4	3.5	11.7	5.0	3.4	1.6	2.3	1.0
1959 . . . . .	14.1	7.5	16.8	8.7	5.7	3.0	3.0	1.5

Computed from data in the "Quarterly Financial Report for Manufacturing corporations," 1952-59 issues, published by the Federal Trade Commission and Securities and Exchange Commission.

## OUTLOOK FOR MARKETING SERVICES

Farmers marketed a slightly larger volume of both crops and livestock products in the first 9 months of 1960 than during the same period last year, and the total for the year may exceed last year's record. Farmers' marketings are expected to continue near the present volume in 1961. Part of this year's record farm output will be marketed next year. Livestock production is expected to increase, and crop production will again be high unless weather conditions are unfavorable.

In the first 8 months of 1960, output of manufactured food products, apparel, and tobacco products was moderately larger than in the like period last year. But the output of textile mill products was down slightly.

Corporations manufacturing products from agricultural raw materials invested more in plant and equipment in the first three quarters of 1960 than in the same period of 1959. Investments by manufacturers of food and beverages are expected to total about \$940 million this year compared with \$830 million last year. Manufacturers of textile mill products may invest about \$53 million this year, up from \$41 million in 1959.

Consumers' disposable income per person increased in each of the first three quarters this year, and it is expected to remain high next year. Consumers spent about 20 percent of their disposable income for food this year, the same percentage as last year; the percentage spent for clothing is slightly higher than last year.



Dollar sales of retail food stores totaled 4 percent higher in the first 8 months of 1960 than in the same period of 1959. Increases on prices and in volume both contributed to the gain in dollar sales.

In recent years grocery stores have been devoting more space to nonfood products than formerly. Such items as health and beauty aids, small household appliances, apparel, and magazines are now found on their shelves, in addition to household supplies, tobacco products, and

other nonfood articles that have been stocked for many years. In 1947 food accounted for 88 percent of total grocery stores' sales; beer, wine, and liquor for 2 percent; and nonfoods for 10 percent. By 1959 sales of food had declined to 80 percent, but sales of alcoholic beverages had increased to 5 percent and nonfoods to 15 percent. <sup>1/</sup> During 1947-59 grocery stores' sales doubled; 20 percent of this increase was due to a tripling of nonfood sales. Many nonfood articles have a larger gross margin than most foods.

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<sup>1/</sup> From "What Customers Spent for All Products Sold in Food Stores," Food Field Reporter, August 29, 1960.

## DEVELOPMENTS IN DAIRY MARKETING AND THEIR IMPLICATIONS 1/

The dairy industry is in the midst of a period in which technological discoveries are being applied widely at all stages--in production, transportation, processing, and distribution of milk and its products. Like a chain reaction they affect the character and organization of the entire industry and the consumption patterns of all its products.

Some of the changes have been hastened

or aided by the economic climate of our time, for during the last 15 years, employment opportunities have been plentiful and wage rates have been on the increase. During these years many marginal plant operators have sold out and moved to alternative positions, while a rapidly increasing population and growing urbanization have encouraged investment in plant and equipment.

### Changes in Production

The most striking characteristic of the farm production of milk is that it has more than kept pace with market demands, though number of cows has declined. Since 1938, the number of milk cows has fallen 17 percent, while average annual production per cow has risen 37 percent, from 4,589 pounds to 6,438 pounds in 1959. Man-hours of labor per 100 pounds of milk produced decreased from 2.4 in 1950 to 1.8 in 1959. Back of these sharp changes have been: (1) General adoption of improved feeding practices; (2) wider knowledge and use of new feeds and improved roughages and pastures; (3) widespread use of superior dairy sires; (4) heavy investments in labor-saving facilities encouraged by the generally good financial conditions of dairy farmers and

easy availability of capital during the postwar period; (5) rise in the average level of management on dairy farms.

The dairy farmer is becoming a specialist marketing whole milk. In 1959, whole milk comprised about 90 percent of farm dairy marketings compared with about 40 percent in 1939. Since 1954, the number of farms reporting milk cows has declined by about a third. Average production per farm has risen greatly as shown by daily average deliveries of producers in Federal order markets--from 399 pounds in 1954 to 619 pounds in January 1960. Probably these trends toward higher production per cow, increased herd size, and greater labor efficiency will continue for some time into the future.

### Changes in Transportation of Milk

Adoption of expensive labor-saving equipment and methods has been a factor in increasing herd size. Particularly important in the last 5 years has been the widespread adoption of bulk milk tanks and in-place milking equipment on farms. In January 1956, about 30,000 bulk milk tanks were in use in the United States. By January 1960, nearly 142,000 were reported. From January 1959 to January 1960 the number of bulk tanks increased about 20 percent. In some localities, farmers are encountering increased difficulty in finding profitable outlets for can milk.

The increased use of tank trucks for moving milk from farm to plant has widened supply areas for plants and will ultimately wipe out the need for country assembly plants. Milk can be picked up at farms and moved directly over long distances to deficit plants and markets, without first being brought into a plant for cooling and reloading into an over-the-road tank truck. As an example, milk from Missouri farms in 1959 qualified for direct shipment to San Antonio, Texas.

These new possibilities have created problems in the pricing of farm milk.

1/ Prepared by Anthony G. Mathis, Agricultural Economist, Marketing Economics Research Division, Agricultural Marketing Service.



Location differentials--differences in farm prices for milk originating at different distances from the market--have had to be reexamined. In the New York-New Jersey market order, separate provisions are proposed for directly shipped milk

and milk reshipped from country plants to handlers. The farm location rather than the country plant is proposed as the pricing point. The bulk route, rather than the country plant, is the unit which must be qualified for the pool.

### Changes in Processing and Distribution

Reduction of Labor Inputs.--In processing, the new technology has been aimed largely at reducing labor inputs, and it has been remarkably successful. As an example, one dairy product plant handling over 1.5 million pounds of whole milk daily requires only 9 men to operate its plant. Its products include ice cream mix, bulk cream, nonfat dry milk, and condensed skim. In the flush season, a continuous churn makes sweet butter which is stored for ice cream making. Pushbuttons control the metering of ingredients by electric pumps. This plant receives bulk milk and moves its liquid product in bulk tanks. Ice cream making now can be completely automated, thanks to the development of the continuous freezer, packaging equipment, and hardening tunnel.

Larger fluid milk plants have decreased unit labor inputs heavily by high-temperature short-time pasteurizing, automatic handling of packaged milk, and in-place cleaning. In spite of increased wage rates and material costs, 80 representative medium and large milk plants studied by the U. S. Department of Agriculture held processing costs to a 1-percent rise from 1955 to 1958. Smaller firms are hindered in taking full advantage of the new technology by lack of capital resources, small volume, position in the market, and sometimes by quality of management, and their inability is reflected in their costs. In smaller firms (under 15 million pounds of product sales per year), unit processing costs averaged 36 percent above those of large firms (over 30 million product pounds annually).

Decline in Number of Plants.--The number of fluid milk plants has been declining since the 1930's, and volume per plant has increased. The U. S. Department

of Agriculture study of 80 fluid milk firms shows that between 1952 and 1959 the annual volume of large plants rose 34 percent, medium-size plants 57 percent, and smaller plants 37 percent. Much of this increase came from absorbing volume from plants which have gone out of business. Preliminary data from the 1958 Census of Manufactures indicate a 5-percent decline since 1954 in the number of fluid milk establishments having 20 or more employees. <sup>2/</sup> This change suggests a sharper decline in the number of smaller plants.

The drop in numbers of dairy manufacturing plants, which is more dramatic, has been hastened by the change from processing farm-separated cream to whole milk. Between 1939 and 1958 the number of plants reporting butter production fell 58 percent, American cheese, 51 percent, evaporated milk, 45 percent, wholesale ice cream, 37 percent. Only nonfat dry milk plants increased in number--76 percent. In the same period, average production reported per plant increased 87 percent for butter, 271 percent for American cheese, 94 percent for evaporated milk, 248 percent for wholesale ice cream, and 263 percent for nonfat dry milk (human food). This trend is expected to continue.

A major part of the fall in plant numbers is due to mergers of small cooperatives and proprietary firms. Mueller reported that small concerns accounted for 70 percent of mergers and consolidations. <sup>3/</sup> The Federal Trade Commission Report on Corporate Mergers and Acquisitions showed that between 1948 and 1954 the two corporations that made the most acquisitions were dairy farms--Foremost with 48 acquisitions and Borden with 17; National

<sup>2/</sup> Adjusted for 87.5 percent coverage in 1958 and 75 percent in 1954. <sup>3/</sup> Mueller, W. F., "A Comment on The FTC's Report on Mergers with Special Reference to Dairy Mergers," Journal of Farm Economics V XXXIX, No. 1, Feb. 1957, pp. 140-152.



Dairy was twelfth with 8. A more recent study of 302 multiunit dairy product firms made by the Department showed that, between 1952 and 1958, these firms acquired 376 other firms. <sup>4/</sup> One dairy product firm was in the group that made between 50 and 79 acquisitions and 3 more were in the group with 20 to 49 acquisitions. Of the acquisitions in this study 85 percent were horizontal integrations, 7 percent vertical integrations, and 8 percent were diversifications through purchase into a different industry.

**Pressure for Uniform Sanitary Regulation.**--The shift from small butter and cheese plants to large multiproduct milk plants has created a large reservoir of milk that is a potential supply for fluid use. Improved roads, trucks, refrigeration, and equipment make it possible to preserve the quality of milk during a haul of 1,000 miles or longer. Plants that control this supply are eager to obtain premium price outlets and press for changes in sanitary and economic regulations that will make more Class I milk outlets available to them. Bills have been introduced in Congress calling for uniform sanitary regulations of interstate milk shipments. Support for such legislation also comes from fluid milk distributors who seek to widen their marketing areas. Even without such measures milk is flowing more readily among markets. U. S. Public Health Service ratings of milk of various plants have facilitated this movement. These ratings are widely accepted by sanitarians as evidence for certifying the acceptability of milk. With certain noteworthy exceptions, economic considerations rather than sanitary regulations limit the movement of milk.

**Centralized Milk Processing.**--Developments in the distribution of fluid milk are more extensive than those in the distribution of manufactured products. The current trend toward large plants is centralizing fluid milk processing. Large volume plants at the perimeter of city areas serve fringe areas and nearby markets in addition to the central city market. From these plants, trucks move milk to wholesale outlets--stores, institutions,

and other users. Semitrailers haul milk to distribution centers strategically located to service home delivery routes, either local or at distant points, and service distant wholesale stops.

The key to this change from local to area plants has been the ability of plants to incorporate new technology into their processing in order to lower costs. By this means they were able to increase net income by increasing sales. With low-priced milk they could invade sales territories of high-cost firms. Such invasions generally involve wholesale distribution of milk in paper containers. Deliveries to home are involved when local distributors cease processing, buy packaged milk and merely distribute it, or when peddlers buy it and start new home delivery routes. Local sales are increased usually by aggressive sales campaigns, sometimes accompanied by price cutting, use of wholesale discounts, and various forms of non-price competition.

In response to widening distribution areas, definitions of markets under most Federal orders have been widened. Two or more Federal order markets have been merged under a single order in several instances. Orders recently initiated cover substantial marketing areas. Long-distance movement of milk eventually may develop to the extent that orders will be established on a regional basis, or even nationally.

**Increased Home Delivery Costs.**--Home delivery costs have risen as cost of equipment and wages have gone up, reflecting a lack of economies of scale and inflexible labor requirements. As a result, some companies are divesting themselves of the retail distribution function. In Detroit recently, for example, major dairies turned retail routes over to drivers as more-or-less independent operators. In New Jersey, Southern California, Pennsylvania, and other areas independent milk delivery already is substantial. The Borden Company in New York has leased its retail routes to 11 companies which specialize in retail distribution. Specialization in retail distribution offers a chance

<sup>4/</sup> Nelson, P. E., Jr. and Paul, A. B., Ownership Changes by Purchase and Merger in Selected Food Industries, Mkt. Res. Rpt. 369, U. S. Dept. Agri., AMS, Washington 25, D. C. 1959.



for survival of smaller companies with high processing costs or limited capital, but with considerable customer good will.

**Shift from Home Delivery to Store Sales.**--The shift from home delivery to store sales--perhaps the most noteworthy change in fluid milk distribution--is still continuing. The study of 80 representative milk distributors mentioned previously shows that their wholesale sales grew from 58 percent to 63 percent of total sales from 1956 to 1959. While the grocery store has become the predominant wholesale outlet, less conventional ways of selling milk are gaining importance. The number of dairy stores has grown. Drive-ins are numerous in the Western States. Vending machines have tripled in number since 1955. On January 1, 1960, 47,300 indoor milk vending machines and 34,700 ice cream vending machines were reported. In 1959, they sold \$81 million of milk and dairy products.

But the shift toward store sales has slowed up. Some consumers want home delivery, hence such service will continue. To this end, firms are endeavoring to lower costs of home delivery routes. In most markets, frequency of deliveries has declined from daily to three times weekly, and in some markets twice-a-week delivery is found. Definitely, the trend is toward fewer deliveries. With concentrated milk, perhaps weekly deliveries to homes would be found feasible. On the other hand, a successful concentrated milk or dry whole milk sold at relatively low prices as a staple item in food stores undoubtedly would increase the proportion of milk sold through stores.

**Changing Price Policies.**--Innovations in containers and pricing policies were a major cause of the shift from home delivery to wholesale distribution. Quantity discounts were early introduced on home delivery routes to counter the lower per quart prices charged consumers at stores. Quantity discounts are based on the fact that the cost of delivering several quarts of milk is only slightly more than the cost of delivering 1 quart. Rather than reduce single-quart prices or establish quantity discounts on quart units of milk or in order to differentiate their products, distributors introduced half-gallon and gallon containers into markets at discount prices.

**Changes in Containers.**--Use of multiple-unit containers has become general. In our 80 representative milk firms, sales in multiple-unit containers increased from 15 percent of the total volume of milk sold in 1956 to 57 percent in 1959. This research also shows that from 1956 to 1959 the change from retail to store sales, plus increased sale of milk at quantity discounts, reduced the average price of milk paid by consumers at least 0.5 cent per quart, though the single quart price went up about 1 cent.

A tetrahedral paper container has proved successful in Europe, and USDA research has shown it to be a low-cost way of providing milk to schools. It could be the next major container innovation. A new plastic container advertised recently also may become popular.

**Price Wars.**--Because technological developments are widening distribution and supply areas, pricing in the fluid milk industry is more competitive than it was 10 years ago, and price wars are more frequent. No less than 20 price wars in major markets were reported from June 1959 to March 1960. To increase volume or widen distribution areas, some firms have introduced pricing innovations and multiple-unit containers into markets which have had stable prices for long periods under what might be called "administered pricing" or price leadership. When a firm reduces prices in a market, established sales and price patterns are disrupted, and price wars often break out. In time, new equilibria can be expected. New sales and price patterns and widened sales areas, based on processing and distribution innovations frequently are established.

Intensive study of one price war indicated that larger firms with sufficient capital to sustain aggressive tactics can survive and increase their share of the market. Small firms often cannot support a price war and are forced to merge or close their doors.

**More Regulation.**--Intensified wholesale and retail price competition and increased mobility of milk have been major causes for the increase in the regulation of producers' milk prices.



Federal orders, which set minimum prices, have increased from 19 in 1940 to 80 in 1960. Eighteen States also regulate producer prices. Over two-thirds of the supply of milk for city markets falls under State or Federal producer price regulations.

The extent and duration of resale price cutting or price wars depend on the financial reserves, the technological advantage of firms involved, and on their ability to pass resale price cuts to producers as lower farm prices for milk. In a price war, plants with financial reserves or technological advantages, like other firms, are prone to reduce prices paid producers or to obtain low-priced milk from sources outside the usual milkshed.

Faced with the threat of a price cut or disruptive marketing conditions, producers have petitioned for and obtained Federal and State orders. They have sought to prevent the chaotic effects of price wars from extending to prices they receive. Often distributors have supported their action.

In some States increased price competition, sometimes as a result of pricing innovations or the entry of outside milk, has brought about State legislation to control retail pricing. Such legislation has taken the form of State milk orders or fair trade laws. Of the 19 State milk control laws in effect at present, 16 authorize setting minimum resale prices, and 13 control retail prices. Milk control laws have been brought before the legislatures of a dozen or more other States.

Fair trade provisions of one type or another are contained in all State milk control acts. In addition, specific fair trade laws applying to milk sales have been passed in a number of States that do not establish producer or resale prices. These laws seek to limit price and non-price competition without rigidly controlling resale prices. Such laws may affect profit margins, pricing methods, advertising, and various other forms of nonprice competition.

Both fair trade laws and resale price fixing provisions tend to hinder competition from performing its role of allocating marketing resources. They may inhibit

technological advances in processing and distribution and lengthen the life of inefficient operations and outmoded practices. These are not necessarily effects of retail price fixing. More distribution innovations have started in California, which fixes resale prices, than in most other States--drive-ins, for example, originated in California. They are a combination of plant and dairy store, and they sell milk at the price established for retail sales at dairy plants. Some drive-ins have been started by milk producers seeking higher returns, and others are units in chains of drive-ins. Increasing in number, they appear to be reaching the point of taking an appreciable part of the market. Recently a use permit was denied for a mobile plant developed for processing milk at grocery store locations, so they also might sell milk at prices equivalent to plant platform prices. The success of drive-ins raises the question anew whether small-scale plants can compete with large plants on the basis of efficiency.

Less Dramatic Changes for Manufactured Products.--Technological changes in processing and distributing manufactured dairy products appear less dramatic than those for fluid milk, but they have had significant impacts on marketing. A method for continuous churning of butter was developed in the 1940's, however, most butter is still churned by the batch method. A continuous process for cheese is reported, but it is not yet perfected. Ice cream making in larger plants now can be a completely continuous automated operation; specialized plants are making an increasing proportion of frozen products.

Pasteurizing milk and cream before making cheese and butter is now general. This, plus improvement in the quality of farm milk delivered to plants, has made possible more uniform and higher quality products than those formerly available. In a recent survey covering about half the stores in one city, 70 percent of samples of all brands of butter sold in the stores were grades A or AA.

Developments in packaging and packaging equipment, together with uniform quality, have aided the growth of mass merchandising of natural cheese and ice



cream in food stores and increased their consumption. Dairy counters in food stores now offer a variety of natural cheeses and cheese foods formerly available only in scattered specialized cheese stores. Food stores now sell between 50 and 60 percent of frozen products while drugstores, formerly the major outlet, handle only about 6 percent. Improvements in home refrigeration have aided this shift. Families today buy ice cream in larger packages than formerly to have a supply on hand for use as a daily food. Over 60 percent of packaged ice cream now is sold in half-gallon containers.

Equally significant is the shift in nonfat dry milk processing from roller to spray powder, development of types of powder for specific uses, and the invention of instantizing, which drove regular powder out of the retail market. Cottage cheese, like ice cream, more and more is being made in specialized plants. Methods have been developed for using nonfat dry milk to make a uniform high-quality cottage cheese, and cottage cheese making no longer is dependent on supplies of surplus skim milk in city markets.

Changing Pattern of Dairy Product Sales.--Technological changes have had significant effects on the pattern of sales of milk and dairy products.

Homogenizing has become so generally accepted that in 1959 about 96 percent of whole milk sales by USDA's 80 representative milk distributors was homogenized milk. From 1956 to 1959 cream-line and premium milk sales declined from 9 to 4 percent.

The use of nonfat dry milk and condensed skim milk for fortifying fluid milk and for reconstitution has been approved in some States, when the products are properly labeled. Cottage cheese, another skim milk item, has more than doubled sales since 1950. Sales of skim milk items--buttermilk and skim or low-fat milks--increased 85 percent compared with a 27-percent increase in total sales by the 80 representative firms. Some of this increase has been due to increasing emphasis on weight control by the general public.

Instant nonfat dry milk has become an

important household source of milk. In 1959, 21 percent of the nonfat dry milk sold for use in this country was packaged for home use. Recombined milk, made from nonfat dry milk and butter oil or vegetable oils, has been developed for use in deficit overseas areas and, with some assistance from Government programs, has become a significant outlet for nonfat dry milk. Recent establishment of standards for grade A nonfat dry milk and condensed skim milk, and the approval by many States and municipalities of fortified milk open a possibility for the acceptance of recombined milk for domestic sale, without discriminatory labeling. Should income and employment conditions make consumers in this country more price conscious, recombined milk might receive greater attention. Given favorable conditions recombined milk might well attain extensive acceptance in markets which are short of milk and can obtain additional supplies only at a high cost. Nonfat dry milk and butter oil obtained from pool plants in Federal order markets located in the manufacturing dairy areas could be delivered to a number of markets at prices well below the cost of obtaining fluid whole milk.

The rise of these various substitutes for fresh whole milk constitutes a sustained and determined attack on the differentiated fluid milk portion of the dairy market. However, USDA research indicates that domestic sales of instant nonfat dry milk are supplemental to whole milk sales rather than competitive. There is no indication that fluid milk has lost an appreciable amount of sales. Since 1948 consumption of fluid milk and cream has been fairly stable at around 350 pounds of milk equivalent per person. On the other hand the quantity of milk fat sold in fluid milk has decreased. School lunch and special milk programs now amount to 4 percent of sales instead of 1 percent in 1948.

Concentrated milk and instant dry whole milk have been a source of considerable concern to much of the fluid milk industry. Fresh concentrate introduced in 1950-51 failed to make much of a dent in fluid sales. Distributors have been unwilling or unable to price the product far enough below fresh fluid milk to get consumers to accept it.



No major attempt has yet been made at low-cost distribution for concentrated milk that will utilize its natural advantage of low bulk as a basis for quantity sales and reduce number of deliveries per week to stores and homes.

Sterile concentrated milk, to be sold as a staple product in stores, was scheduled for market trials this fall, but there are indications that technical problems have delayed its entry to market. USDA has developed an instant whole milk powder of excellent flavor after reconstitution, but practical ways are yet to be found for combating fat oxidation and increasing its shelf life.

These concentrated products could force more rapid improvement in fluid milk distribution, lowering consumer prices, and increasing milk use. If they displace a significant part of fluid milk sales, producers in city milksheds will face declining blend prices; those in surplus milk areas will get slightly more for their milk.

The advent of polyethylene consumer packages of rindless natural cheese has popularized natural cheese. Increased natural cheese sales probably have accounted for most of the increase in cheese sales from 5.9 pounds per person in 1935-1939 to 8.3 pounds in 1959. Foreign-type

cheese has become more popular, and its production in the United States is increasing.

Soft-serve frozen products, especially ice milk, are gaining in popularity, though they still make up only 9 percent of the production of frozen products. Mellorine-type frozen products, which use vegetable fat in place of milk fat, are gaining in the 12 States where their sale is permitted. Novelties also are competing increasingly for the frozen product market.

The major dairy market of the United States continues to be at home. Exports are declining. In 1959, about 1 percent of farm milk production in terms of milk equivalent was exported as dairy products as compared with nearly 3 percent in 1957 and 1958, and more than 3 percent in 1947. Exports would be substantially lower without donations and assistance from Government programs which make possible extensive sales at reduced prices. Dollar sales promise to be somewhat higher in 1960.

Imports, except for casein and foreign cheese, are insignificant. These products supplement U. S. production rather than compete with it. The entry of competing products is limited by quotas under section 22 of the Agricultural Adjustment Act.

### Implications

The dairy industry is midway in a major adjustment of plants, distribution, and products. A continuation of the trends of the last few years can be expected. Processing and manufacturing plants throughout the country will continue to become fewer in response to changes in technology which make large volume imperative. These adjustments will be particularly noticeable in the midwestern dairy manufacturing States. Increasingly such dairy products manufacturing areas will become sources of milk for bottling as sanitary regulations and their application become more uniform. As a result of more free and widespread movement of milk, prices of farm milk in different localities can be expected to become more closely aligned, differing chiefly by the costs needed to move the milk to market.

Distribution, which takes the largest portion of the margin between farm milk and the consumer, has changed. It will probably change more in the immediate future, at least in fluid milk, than will other functions of marketing.

The changes so far have given food stores a firm and important place in price-making for fluid milk. Heavy dependence of milk distributors on food stores as outlets, the strong bargaining position of food chains buying large quantities of milk, and heavy competition among stores for retail business will keep up pressure for lower fluid milk prices. Competition from drive-ins, gallon jug stores, vending machines, and the impact of new products such as concentrated milk and dry whole milk will



intensify this pressure on food stores to keep milk prices low.

With this kind of situation, fluid milk firms have no choice but to organize both wholesale and retail distribution more efficiently.

Manufactured dairy products, which already have relatively low-cost distribution through food stores, are making their adjustment at the plant level by establishing more efficient units, in some cases by specializing plants for production of one product. In larger firms with sales organizations, unit-selling costs may be lowered by adding new products to their lines, often through mergers or purchases of other firms. The more uniform and

higher level of quality brought about in dairy products has made feasible mass merchandising of cottage cheese, ice cream, and natural cheese. But it also has lessened the individual character of each plant's and firm's product. More and more, firms will depend on advertising, distinctive packaging, and other promotional methods to differentiate their products. These considerations suggest the continued development of regional and national dairy distributors integrated to include all marketing functions from the dairy plant to the food store, able to take advantage of specialized production in plants, and large enough to support a strong sales organization and regional or national promotion.

## RECENT AND PROSPECTIVE DEVELOPMENTS IN TRANSPORTATION

### Our Inland Waterways 1/

#### Early Growth, Decline, and Recovery

This country's rate of industrial growth over the past 175 years depended on its expanding transportation system, and a significant contribution to its progress is written in the history of inland water navigation. During the early development of our Nation, river carriers played a major role in domestic trade. As overland transportation was limited, the natural river systems emerged as our principal avenues of commerce. By 1790, sizable cargoes, mainly of agricultural commodities, were moving regularly on many inland rivers. The annual value of all traffic hauled on the Mississippi by 1807 was estimated at about \$6 million, and around 1860, cargoes on all midwestern rivers were valued in excess of \$300 million. Between 1800 and 1840, canals began to flourish as an important supplement to river routes. From its inception, waterborne commerce all but monopolized the industrial and agricultural output of early America.

Unchallenged until almost the middle of the nineteenth century, water carriers continued to serve our growing Nation until competition from railroads appeared. Freight hauling by rail brought a major shift to overland transportation and commercial traffic began to desert the rivers and canals for the rail services. All but a few canal operations were eventually abandoned. But the inland rivers continued to function as a necessary component of our growing transportation system.

Interest in the Nation's rivers was renewed early in the twentieth century when increasing rail freight rates encouraged search for cheaper means of transport. Water carrier operations expanded to meet this demand as barge tows, propelled by powerful tugs, supplanted the earlier packet boats.

The ability of the natural river systems to absorb the added cargo was limited, however, because navigation restrictions, including shallow and crooked channels, were generally the same as they had been 100 years earlier. If traffic congestion on the rivers was to be relieved, remedial action was necessary. The Federal Government inaugurated a program for waterway maintenance and construction that has revived and expanded inland water transportation during the last 40 years. Development of navigation was often coupled with power, irrigation, and flood control projects. In just 4 decades, engineering skill has transformed our rivers into a modern network of interconnected waterways. Today, about 29,000 miles of commercial water routes are available throughout the Nation; 52 percent are navigable to a depth of 9 feet or more.

Shortly after World War II diesel power revolutionized inland water transportation, a development paralleling an upward trend in overland freight charges. Low-cost service attracted tonnage to the waterways, particularly bulk commodities.

In 1948 inland water vessels (not including Great Lakes carriers) handled about 4 percent of the Nation's intercity ton-mile freight traffic. By 1957 the water carriers' share had climbed to approximately 9 percent. The number of towboats increased by 14 percent from 1948 to 1957, while their average horsepower jumped 40 percent. The barge fleet increased 30 percent and average load capacity 17 percent. With continued improvements in waterways, traffic climbed to 392 million tons in 1957, a 38-percent increase in 10 years, and average distance per ton hauled increased 92 percent. Traffic on the Mississippi River system jumped 79 percent, while tonnage on other rivers increased 14 percent. In 1958, the last full year for which statistics are available, traffic on

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1/ Prepared by Robert M. Bennett, Transportation Economist, Transportation and Facilities Research Division, AMS.



the waterways dropped 7 percent owing to labor strikes in the steel and water carrier industries.

Traffic in agricultural commodities almost tripled between 1948 and 1958, from 4.5 million tons to 12.0 million. In 1948, 3.1 million tons of grain and grain products, excluding soybeans, moved on inland waterways; by 1958 the volume was 7.0 million tons, 126 percent greater. These commodities made up more than half of the agricultural traffic. Total movement of agricultural commodities showed no change from 1957 to 1958, but the volume of grain and grain products was up 19 percent.

Waterside facilities increased as traffic grew. Some 3,200 industrial plants were built or expanded along inland waterways during 1952-59. About 110 were agricultural plants, principally grain elevators and storage facilities, and all but a few use water transportation.

#### Outlook for Future Growth

What does the future hold for the inland waterways? It has been estimated that during the next 20 years the average Federal investment in maintenance and expansion will be \$400 million annually. Leading proposals and current projects, as indicated by the Corps of Engineers, U. S. Army, the organization responsible for planning and construction, comprise an impressive list.

Traffic on the Illinois Waterway will increase 65 percent by 1970, according to one estimate. The present capacity of some existing locks will soon be reached. A pending proposal authorizes the building of supplemental locks to handle the expected rise in freight cargo. Full use of the Missouri River for navigation as far north as Sioux City, Iowa, may be a reality by 1967. A 9-foot channel now reaches from the mouth of the river to Kansas City. The authorized depth of 9 feet is about 90 percent completed to Omaha and is being extended to Sioux City. The Ohio

River is undergoing a modernization program initiated in 1954. The 46 existing locks and dams are being replaced by 19 modern facilities. Fourteen new locks have been authorized by Congress and five others, more recently built, are being expanded. Six new locks are near completion.

Major changes are underway on the Warrior-Tombigbee Waterway. The construction of two locking facilities will greatly improve shallow-draft navigation. One locking facility above Tuscaloosa, Ala., will replace four obsolete locks, and the other, north of Mobile, Ala., will displace three outmoded lock sites. The connection of the Tennessee River with this waterway is now under consideration for possible development in the near future. The Chattahoochee River is being equipped with four new locks and dams. By 1963, a 9-foot channel will be available from Columbus, Ga., and Phenix City, Ala., to the Gulf.

A billion dollar improvement program has been recommended to Congress for the Columbia River. A navigable channel is now available from the mouth of the river as far inland as the McNary Dam near Plymouth, Wash. The proposal calls for the extension of navigation by a 14-foot channel beyond McNary Dam to Wenatchee, Wash., and on the Snake River tributary to Lime Point, above Lewiston, Idaho. Two navigation locks would be constructed at Priest Rapids and Wanapum Dams. Deepening of the channel to 27 feet from Vancouver, Wash., to The Dalles, Oregon, is a feature of this recommendation.

An extensive program for the expansion of our waterways is centered around the development of the Arkansas River. Present plans call for a 9-foot channel from Catoosa, Okla., to the junction with the Mississippi River, 520 river miles downstream. Keys to the navigational phase of the project are seven major dams along the river and its tributaries. Construction will extend into 1973. The \$1.2 billion estimated cost is about a third of the total sum spent by the Federal Government to



date on all previous multiple purpose irrigation, navigation, power, and flood control projects.

Other expansion projects under consideration include the Trinity River in Texas and the Florida Cross-State Barge Canal. Should the Trinity River development become a reality, Ft. Worth and Dallas would have an all-water route to the Gulf and probably emerge as major grain shipping ports. The Florida project would connect the Atlantic and Gulf Intercoastal Waterways with a 12-foot channel from Jacksonville to Inglis.

Large increases in commercial cargo movements on inland waterways during the next 20 years are in prospect. Current charges for inland water transportation now average about 4 mills per ton-mile, in contrast to 16 mills per ton-mile charged by rail. Low-cost service is attracting more and more tonnage to the river systems. From 1948 to 1958 traffic on the

waterways increased at the average rate of 7.5 million tons annually.

Continued demand for service has already prompted Congress to approve the modernization of some 3,200 miles of existing water facilities and to authorize about 1,300 miles of new waterway construction, at an estimated cost of \$2.5 billion. Other proposals could result in improvements to another 6,800 miles of the river channels and bring an additional 1,700 miles of new waterway into the Federal system at a cost of \$5.4 billion. All of the projects could be completed in the next two decades. The rate of development may rest entirely on the future requirements of industry and agriculture for water carrier service. In view of the recent surge in inland water commerce, water carrier interests are forecasting a 96-percent increase in freight tonnage by 1980. The industry handled 366 million tons in 1958 and envisions the movement of 717 million tons within the next 20 years.

#### Fishyback--An Improved Method for Water Transportation of Agricultural Commodities 2/

Freight handling by ocean carriers is undergoing major changes, particularly in the handling of agricultural commodities. A few years ago, cargo was shipped in individual boxes, crates, cartons, or bags. The numerous handling processes needed to load and unload this break-bulk cargo consumed costly time and resulted in heavy losses from damage and pilferage. Through the use of van-sized containers, these operations can now be performed in fewer hours, handling costs cut, and losses minimized. Since about 1947, changes leading to these improvements have been rapid.

#### Early Developments and Growth

About 13 years ago, shipping companies began to experiment with the new idea of

transporting semitrailers on ships, a method popularly referred to as "fishyback." These experiments were based on knowledge gained from experience with beachhead landings in World War II. In time, the semitrailer was modified so that the body could be detached from the trailer chassis and only the "box" transported. These "boxes" have since become known as demountable vans, van-sized containers, or demountable trailers.

The original fishyback operation called for specially built trailerships. Early trailerships were similar to the LST's of World War II fame, but much larger. In loading and unloading, trailers were rolled directly on or off ships, powered by a tractor or towline.

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2/ Prepared by Joseph R. Corley and Ralph O. Foster, Transportation Economists, Transportation and Facilities Research Division, AMS.



The roll-on, roll-off method has been used to some extent, but it has certain shortcomings. Costly construction of the trailerships has hindered its development. The necessity for special port facilities has limited operations to ports equipped for trailerships. Aboard the ships, valuable storage space was taken up by the undercarriage of the trailers. Furthermore, utilization of equipment was lessened because the trailer chassis was immobilized during the period of the water movement. But a recent improvement of the roll-on, roll-off method employs lift trucks to carry van containers on board specially designed ships through an opening in the stern. This operation eliminates the wasted storage space occupied by the trailer chassis and releases it for land service.

A variation of semitrailers on shipboard that uses demountable van containers was inaugurated in the early 1950's between the continental United States and Alaska. Van containers were delivered to port, detached from the trailer chassis, and lifted onto vessels for delivery to Alaskan ports. In Alaska, the van containers were lifted onto waiting truck chassis or rail flatcars for delivery to consignees. The van containers loaded on flatcars were shipped to inland destinations before they were transferred to truck chassis for delivery to individual customers.

This lift-on, lift-off operation maintains the advantages of shipments in semitrailers, and does away with the disadvantages of the roll-on, roll-off method. Ships and barges already in use may be adapted for carrying van containers on deck. Port facilities require no major alterations, and van containers can be unloaded at several ports of call, without the first on, last off problems that result from the roll-on, roll-off method. Van containers can be loaded or unloaded by ship cranes.

The greatest growth in fishyback has occurred within the last 4 or 5 years. Less than a fourth of the companies that

are offering van container service in 1960 did so before 1955.

### Routes and Commodities

On the West Coast, service is available between points in the Western States and Alaska, Hawaii, the Philippines, Okinawa, Japan, and other destinations in the Pacific. Every major ship company operating from the West Coast now offers van container service or has plans to offer one. Agricultural commodities are moving extensively between the continental United States and Hawaii and Alaska. Movements to other Pacific destinations are mostly fresh and frozen food for military installations. Among these commodities are fresh fruits and vegetables, potatoes, onions, flour and feed, frozen foods including meats, chilled fresh meat, cheese, powdered milk, and ice cream. On return trips the ships haul frozen tuna and other fish in insulated van containers.

On the East Coast, fishyback service is available between most major Atlantic and Gulf ports, Puerto Rico, and some Caribbean and South American countries. Growth in the use of van containers and container-ships at these ports has been pronounced since 1956. More recently, similar service has been made available between certain ports on the Great Lakes.

Agricultural commodities account for most of the fishyback traffic moving between Atlantic, Gulf, and Caribbean ports. Evenly controlled temperatures in insulated van containers permit vine-ripened tomatoes or field-ripened pineapples to be shipped safely from Puerto Rico to various ports on the mainland, and in some cases, to inland destinations. Other commodities shipped by demountable vans from Puerto Rico are refined sugar, coffee, plantains, and mangoes. Tropical plants requiring controlled temperature move from Caribbean islands.

Containership service has opened up new markets for highly perishable commodities. For the first time, Puerto Ricans



are able to buy in quantity such items as fresh pork, fresh eggs, and cut Christmas trees, heretofore available only in limited quantities and at a greater cost. Other products shipped to Puerto Rico in 1959 included potatoes, frozen poultry, ice cream, fresh and frozen meats, tobacco, and dried beans in bags.

With the inauguration of fishyback service, relatively small, but increasing quantities of Texas fruits and vegetables are moving via van containers loaded in the Rio Grande Valley and shipped from Texas ports. Fresh and frozen meats also move in volume from these ports. Moving northward from Florida seaports are fresh citrus and frozen citrus concentrate from Florida and frozen vegetables from Georgia and Florida. Southbound from northeastern ports, a considerable volume of fresh and frozen beef is destined for Florida and eastern Gulf ports.

#### Equipment

Containers and Vans.--Types and sizes of van containers in use vary greatly, depending upon the company offering the service. Van containers are "roadable" units, adaptable to over-the-road or over-the-rails service at either end of the water portion of the trip. One, two, or three units, depending on the length, may make up a trailer or flatcar load for overland transport.

Efforts toward standardization have resulted in the agreement that the outside widths and heights of van containers should be about 8 feet each. Progress has been made toward agreement upon standard lengths, though van containers may now vary in length from 8 to 40 feet. The length of van containers often depends on such variables as receiving facilities at overseas ports, hold sizes of vessel, and highway limitations upon overall tractor-trailer length. For example, a carrier operating in a State where the tractor-trailer length is limited to 50 feet is likely to use a single 35- or 40-foot van, whereas in States allowing longer lengths,

a carrier may use 24- or 27-foot vans, loaded two to a chassis or as double trailers.

Van containers stowed below decks of general cargo vessels are usually no longer than 24 feet; demountable vans and trailers carried on deck may be of any length up to 40 feet. Ships may be designed to carry any length of van; the most popular van sizes in containership operations are 17-, 24-, and 35-foot vans.

Temperature-controlled vans are usually at least 15 feet long. The added cost of insulation and temperature control prohibits the use of vans and containers with a low cubic capacity. Some containerships have holds especially designed for these vans; general cargo ships carry temperature-controlled vans on deck. The vans' refrigeration units are plugged into the ship's electrical system. The units are electrically driven while aboard ship and powered by combustion engines using liquid fuel or propane gas during overland transit. In Alaska, temperature control units of the vans are powered by generators mounted on the road tractors or by power rail cars for rail shipments.

Ships.--Most of the fishyback cargo originating at West Coast ports and moving to destinations in the Pacific and Far East travels aboard vessels designed to carry general cargo. These ships, either Liberty ships or the faster, more modern C-series, carry the vans primarily as deck cargo, hold space being utilized for break-bulk cargo or small containers.

The containership, carrying only van containers, has been most prominent in the fishyback traffic moving through Eastern and Gulf ports. These ships ply both the intercoastal trade routes and the routes serving Caribbean and South American ports.

The typical containership in operation as of June 1960 is a converted C-2 cargo vessel. The hold has been redesigned and fitted with steel slots similar to elevator



shafts. Vans are lowered into these slots, one atop the other, and secured for sea. A containership may carry from 226 to 476 vans, depending upon the van size. These containerships are equipped with 2 or 3 diesel-powered, self-contained gantry cranes, thus eliminating the need for dockside loading and unloading equipment. These cranes make possible loading and off-loading at the rate of one van per crane every 4 to 5 minutes.

The first vessel designed expressly for containerized cargo entered the trade shortly after mid-1960; several others are being built for delivery by early 1961.

### Advantages

Shipper.--Probably the biggest single advantage containerization offers for water shipment of agricultural products is improved service, especially in the movement of perishable commodities. Refrigerated containers may be loaded directly from the fields, taken to shipside, and transported to distribution outlets hundreds of miles away. Direct movements such as these eliminate at least four handling points between field and vessel.

Decreased handling and shorter time in transit, along with continuous temperature control, result in a better quality of delivered products. Loss and damage in transit, sometimes running as high as 10 percent for water shipments before the advent of containerization, has been sharply reduced. Increased customer satisfaction results, and this leads to increased orders.

The greater volume loaded per van also eliminates much of the time-consuming labeling, stenciling, and paperwork. Containerized shipments can move from shipper to receiver on a through bill of lading, regardless of modes of transport employed.

Receiver.--The regularly scheduled sailings of containership to and from overseas ports assure the receiver of the

ready availability of his orders. With a dependable supply line, the receiver is able to maintain better control over his inventory. Savings in cost at ports may be reflected to his advantage in more competitive prices.

Carriers.--Most apparent of the advantages containerization offers the carrier are the economies resulting from vastly decreased loading time. The comparatively short distances between ports of call for intercoastal movements, resulting in a relatively greater time spent at the ports, increases the need for savings in time required to handle cargoes. It has been estimated that containerized cargo can be loaded up to 8 times as fast as conventional break-bulk cargo. Reduced in-port time and handling costs more than offset any loss in cubic volume resulting from the use of vans. Reduced handling and storage also result in lower terminal expenses. Claims arising from damages and pilferage have been greatly reduced, thus decreasing insurance costs.

Use of van containers can reduce the ports of call a ship must make, since the van containers can be transported via highway to a central port for loading onto the ship. For instance, a ship normally loading almost to capacity at Texas City, with a stopoff at Galveston for a small pickup, can make the entire pickup at Texas City, by having the van containers at Galveston delivered by highway to the ship's berth at Texas City.

Perhaps the biggest potential saving to carriers lies in the possibility of future reductions in labor costs. A typical containership can be loaded by about a tenth the manpower needed to load a ship with break-bulk cargo using conventional handling methods.

Consumer.--Agricultural products hauled from overseas by fishyback reach consumers in fresher condition than such products hauled by conventional methods, and they are less likely to be damaged in transit, and fishyback also makes it possi-



ble to deliver a wider variety of fresh fruits and vegetables to retail shelves. Transportation economies may be passed on to consumers in the form of lower prices.

### Disadvantages

The early problem of wasted space posed by the use of trailers in the roll-on, roll-off fishyback operation has been solved by conversion to lift-on, lift-off operations, using demountable van containers. Other problems facing the carrier are not so easily met.

Conversion to a containerized operation is an expensive process. The cost of converting a C-2 cargo carrier to a containership is well over \$3 million. Just the adaptation of deck space for containers can cost as much as \$150,000. Added to this is the initial cost of the containers and chassis.

Another problem is resistance of organized labor to work force reduction. Until carriers and labor are able to come to an agreement providing for work force reduction, any savings must come from economies in time and handling, rather than actual labor savings.

A lack of two-way payloads for van containers used in export traffic, especially temperature-controlled vans, means that the one-way charge must cover the carrier's expenses of returning empty. Savings effected by the availability of cargo in each direction may be passed on to the shipper or receiver through reduced rates.

The cost of reduced utilization of vessel space resulting from shipments in van containers is partially offset by lighter packaging requirements. This loss of payload must be further compensated by other advantages if fishyback is to prove profitable for a carrier.

The current lack of standardization in van and container lengths requires each carrier to maintain its own dockside

equipment and prohibits complete integration of transport modes. Were standardization complete, carriers could eliminate much of the present equipment duplication.

Shipper resistance to fishyback must be met by carriers. This service is still relatively new, and charges tend to be slightly higher than those for conventional shipping. Until a shipper is convinced that any benefits to be gained through use of fishyback merit the additional cost, he is reluctant to turn from the older, more familiar shipping methods.

### Outlook

Coastwise movement of agricultural commodities from Gulf to North Atlantic ports has a favorable future because of the shortened delivery time and economy resulting from decreased handling. Demountable vans are being used extensively on the West Coast between ports in the continental United States, Hawaii, Alaska, and other Pacific areas. Service between Great Lakes ports has just begun, but it is expected to expand rapidly.

Acceptance of the van container by many carriers and shippers is reflected in its rapid development. The potentialities probably will lead to greater expenditures for containerships, van containers, and port facilities. From the shipper's viewpoint, containerization provides a safe, economical and flexible means of transportation, particularly important to the shipper of agricultural products.

The rapid growth has not been without difficulty. But as practical solutions are found to problems of labor relations, vessel design, standardization of van containers, and shipper acceptance, continued growth may be expected in fishyback shipments of agricultural commodities and products. Except for products particularly adapted to bulk handling, most agricultural commodities can be shipped advantageously in demountable van containers.



## Agricultural Commodities in Airfreight 3/

### Growth in Volume

Since 1946, airfreight has grown nine times faster than passenger traffic. About 10 percent of total airfreight is agricultural commodities. Although agricultural airfreight is insignificant compared with the total volume of agricultural commodities moved by surface carriers (rail, truck, and water), it has a large potential for further growth.

Airfreight became a large-scale operation in 1946, the first full year of commercial operation after World War II. It was developed to meet the need for the fast movement of commodities, primarily articles of high value, highly perishable agricultural commodities, and other shipments for which transport speed is particularly important. Airlines now perform a vital service for certain types of commodities, such as cut flowers and a few perishable foods for which rapid delivery is essential.

In 1959 five leading freight carrying airlines transported approximately 12,500 tons of horticultural products, 3,500 tons of fresh fruits and vegetables, and considerably smaller quantities of meat products, dairy products, tobacco, live animals, tropical fish, live fish (including lobsters), and fish products.

Agricultural commodity shipments increased by 20 percent from 1956 to 1959. The introduction of jet planes during this period could partly explain this increase. These planes, with speeds in excess of 600 miles per hour, make delivery possible in a few hours regardless of distance. Tonnage increase in agricultural commodity shipments for 1960 over 1959 is estimated at 19 percent.

In spite of its rapid growth airfreight service remains mainly a sideline of passenger service. No especially designed

cargo planes are yet in commercial service, but several turbine-powered planes, designed especially for cargo service, are on order for delivery in 1961. Fifty percent of present airfreight is transported in combination passenger-cargo aircraft, and a considerable cargo will continue to move in passenger aircraft in order to utilize facilities fully. But if airfreight continues its phenomenal growth, cargo ton-miles may exceed passenger ton-miles by 1970. Much of the airfreight in 1970 probably will move in specially designed airfreighters just beginning to come off assembly lines.

### Costs and Rates

Cost has been the chief limiting factor in developing volume of air freight. Airfreight rates do not have to be as low as surface rates to be competitive with them for highly perishable commodities, because of air speed, less packaging required, and less spoilage. But the differential between air and surface rates is too great now for airfreight to be competitive for most commodities. Surface freight rates range up to 50 percent of airfreight rates. (See table 1 for comparison of rates for fruits and vegetables).

Direct operating costs of aircraft now used for freight hauling average about 12 cents per ton-mile with a rate of about 22 cents per ton-mile. The turbine-powered cargo aircraft now on order are expected to cut direct operating costs in half. Airline officials predict direct operating costs eventually will decrease to about 4 cents per ton-mile and they expect rates below 10 cents per ton-mile.

The Civil Aeronautics Board plans to review policy on air cargo rates to determine whether present minimum rates should be reduced or abandoned. The present CAB imposed minimum rate is 20 cents per ton-mile for the first 1,000

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3/ Prepared by John H. Hunter, Jr., Transportation Economist, Transportation and Facilities Research Division, AMS.



Table 1.--Airfreight and rail rates per 100 pounds for fruits and vegetables between selected origins and destinations, 1959

Commodity	Origin	Destination	Air rate	Rail rate
			<u>Dollars</u>	<u>Dollars</u>
Strawberries	Miami	New York	7.20	2.82
Peaches	San Francisco	Chicago	12.25	2.26
Okra	Dallas	New York	9.10	1.18
Asparagus	San Francisco	Boston	17.55	2.01

miles and 16 1/4 cents per ton-mile for any distance beyond 1,000 miles.

Other factors expected to make airline costs more competitive are: (1) More efficient handling equipment, including containerization; (2) improved methods of loading and unloading cargo; (3) increased capacity of planes; (4) more reliable service; and (5) greater utilization of aircraft and facilities.

Among immediate problems of great concern to airlines are: (1) Choosing between rebuilt passenger planes and new cargo planes for additions to the airfreight fleet, and (2) developing improved methods of ground handling. Airlines are also seeking new methods of packaging and temperature controls for perishable agricultural commodities.

#### Prospects for Further Growth

The outlook is excellent for increasing the volume of agricultural commodities moving by airfreight. When direct operating costs and rates are reduced to a

more competitive level, the advantages of shipping by air, such as greater speeds, greater security and protection in transit, and smaller risks of price changes while in transit, should increase the total volume of airfreight substantially. Part of this increase will be in agricultural commodities and foods. The most likely agricultural commodities and foods for expansion in volume are those already moving by air; such luxury-type items as cut flowers, fancy quality, tree-and-vine-ripened fruits and vegetables, and freshly caught seafood.

If airlines are to capture a substantial increase in the total agricultural commodity movement, they must overcome many problems including greatly expanded landing facilities fitted to the jet age, improved speed in delivery to and from the airports, and lower total costs. Airfreight service at reduced rates will aid many specialty horticultural and fruit and vegetable producing areas in competing in markets formerly difficult to reach because of long transit times by surface vehicles and high airfreight rates.



SELECTED NEW PUBLICATIONS

1. "Appalachian Apples--Packing Costs and Efficiency," by Jules V. Powell, U. S. Dept. Agr., Mktg. Res. Rpt. 435, Oct. 1960.
2. "A Study of Practices Affecting the Use of Major Vegetable Oils for Refining and Processing," by William Emory and Jack S. Wolf, Washington University, St. Louis, Mo., July 1960. (AMS cooperating.)
3. "Butter and Nonfat Dry Milk Production in Diversified Plants in Kansas, Missouri, and Oklahoma," by W. Webster Jones, U. S. Dept. Agr., Mktg. Res. Rpt. 430, Sept. 1960.
4. "Chainstore Merchandising and Procurement Practices--The Changing Retail Market for Fresh Fruits and Vegetables," by William E. Folz and Alden C. Manchester, U. S. Dept. Agr., Mktg. Res. Rpt. 417, July 1960.
5. "Class III Milk in the New York Milkshed: IV-Processing Margins for Manufactured Dairy Products," by C. E. McAllister and D. A. Clarke, Jr., U. S. Dept. Agr., Mktg. Res. Rpt. 419, Aug. 1960.
6. "Costs, Methods, and Facilities in Packing South Carolina Peaches, 1959," by W. Fred Chapman, Jr., Jerold F. Pittman, and Adger B. Carroll, U. S. Dept. Agr., Mktg. Res. Rpt. 425, Aug. 1960. (S. C. Agr. Expt. Sta. cooperating.)
7. "Costs of Packing and Selling Florida Fresh Citrus Fruits, 1958-59 Season," by A. H. Spurlock and H. G. Hamilton, Fla. Agr. Expt. Sta., Agr. Econ. Mimeo. Rpt. 60-10, Feb. 1960.
8. "Costs of Picking and Hauling Florida Citrus Fruits, 1958-59 Season," by A. H. Spurlock, Fla. Agr. Expt. Sta., Agr. Econ. Mimeo. Rpt. 60-9, Feb. 1960.
9. "Marketing Milk under Federal Orders in Texas," by Randall Stelly, Tex. Agr. Expt. Sta. Bul. 959, July 1960.
10. "Milk Dating Regulations--Their Effect on Milk Distribution and Merchandising Practices," by Helen T. Blake and Lloyd F. Friend, U. S. Dept. Agr., Mktg. Res. Rpt. 415, July 1960.
11. "Output of Factories Processing Farm Food Products in the United States, 1909-58," by William H. Waldorf, U. S. Dept. Agr., Agr. Mktg. Serv., Tech. Bul. 1223, Sept. 1960.
12. "Price Spreads, Costs, and Marketing Channels for Eggs and Poultry Sold in Trenton, N. J.," by Leo R. Gray, U. S. Dept. Agr., Mktg. Res. Rpt. 434, Oct. 1960.
13. "Price Spreads for Formulated Poultry Feeds in Illinois," by V. John Brensike and Carl J. Vosloh, Jr., U. S. Dept. Agr., Mktg. Res. Rpt. 378, Feb. 1960.
14. "Pricing and Competition on Beef in Los Angeles," by Willard F. Williams and Edward Uvacek, U. S. Dept. Agr., Mktg. Res. Rpt. 413.
15. "The Formula Basis of Pricing Fluid Milk in Georgia--Evaluation and Recommendations," by J. C. Purcell, J. C. Elrod, and N. M. Penny, Ga. Agr. Expt. Sta., Mimeo. Series N. S. 99, Apr. 1960.
16. "The Los Angeles Egg Market," by Norris T. Pritchard, U. S. Dept. Agr., Mktg. Res. Rpt. 440, Oct. 1960.

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:	Publications issued by State Agricultural Experiment	:
:	Stations may be obtained from the issuing Station.	:
:	:	:

Table 10.- Farm food products: Retail cost and farm value, July-September 1960, April-June 1960, July-September 1959, and 1947-49 average 1/

Product 2/	Retail unit	Retail cost						Net farm value 3/					
		July-Sept. 1960	Apr.-June 1960	July-Sept. 1959	1947-49 average	Percentage change: July-Sept. 1960 from -	July-Sept. 1960	Apr.-June 1960	July-Sept. 1959	1947-49 average	Percentage change: July-Sept. 1960 from -		
						Apr.-June 1960	July-Sept. 1960				Apr.-June 1960	July-Sept. 1960	
						June 1960	Sept. 1959					June 1960	Sept. 1959
		Dollars	Dollars	Dollars	Dollars	Percent	Percent	Dollars	Dollars	Dollars	Dollars	Percent	Percent
Market basket 5/.....)	(	1,057.17	1,055.85	4/1,044.72	940.09	6/	1	405.00	4/411.02	4/396.37	466.02	-1	2
Meat products .....	(	279.16	276.71	4/280.87	256.08	1	-1	142.92	4/149.20	4/144.33	170.90	-4	-1
Dairy products .....	(	199.38	196.80	4/195.25	169.28	1	2	88.36	85.74	4/86.78	91.66	3	2
Poultry and eggs .....	Average quantities purchased	89.68	87.77	86.98	117.01	2	3	54.80	54.36	4/50.18	80.69	1	9
Bakery and cereal products	per urban wage-earner and clerical-worker	165.48	163.32	161.25	121.96	1	3	27.94	4/28.51	4/27.63	34.97	-2	1
All ingredients .....	(	---	---	---	---	---	---	20.73	21.50	4/21.04	24.96	-4	1
Grain .....	(	---	---	---	---	---	---	---	---	---	---	---	---
All fruits and vegetables ....	family in 1952	238.58	247.15	234.26	184.68	-3	2	72.35	4/75.01	4/69.54	60.93	-4	4
Fresh fruits and vegetables.....	(	144.78	153.85	136.16	103.91	-6	6	53.26	4/55.99	4/46.71	42.91	-5	14
Fresh vegetables .....	(	68.59	77.03	67.38	53.17	-11	2	23.23	26.16	4/21.75	22.97	-11	7
Processed fruits and vegetables .....	(	93.80	93.31	98.10	---	1	-4	19.08	19.02	4/22.83	---	6/	-16
Fats and oils .....	(	40.73	40.32	42.57	52.21	1	-4	11.44	4/11.03	4/10.55	19.84	4	8
Miscellaneous products .....	(	44.16	43.78	43.53	38.87	1	1	7.19	7.17	4/ 7.36	7.03	6/	-2
		Cents	Cents	Cents	Cents	Percent	Percent	Cents	Cents	Cents	Cents	Percent	Percent
Beef (Choice grade) .....	Pound	80.1	81.7	82.6	68.5	-2	-3	46.5	50.2	4/50.6	48.5	-7	-8
Lamb (Choice grade) .....	Pound	69.0	71.5	73.6	63.9	-3	-6	35.3	39.8	4/39.0	44.2	-11	-9
Pork (retail cuts) .....	Pound	59.1	56.2	57.3	59.4	5	3	30.8	29.7	4/26.7	39.7	4	15
Butter .....	Pound	74.4	74.2	75.0	79.4	6/	-1	52.8	52.4	4/52.5	59.3	1	1
Cheese, American process .....	1/2 pound	34.0	33.9	33.0	29.8	6/	3	14.5	14.1	13.9	16.0	3	4
Ice cream .....	1/2 gallon	86.4	86.9	87.8	---	-1	-2	7/22.5	7/22.3	7/22.3	---	1	1
Milk, evaporated .....	14 1/2 ounce can	15.8	15.7	15.2	13.7	1	4	6.3	6.3	6.1	7.1	0	3
Milk, fluid .....	Quart	25.4	24.9	24.7	20.1	2	3	10.9	10.4	4/10.7	10.6	5	2
Chickens, frying, ready-to-cook	Pound	43.0	43.3	41.9	---	-1	3	23.1	24.2	4/21.5	---	-5	7
Eggs .....	Dozen	53.8	51.6	52.1	66.7	4	3	35.8	34.3	4/32.4	48.0	4	10
Bread, white													
All ingredients .....	Pound	20.5	20.1	19.7	13.5	2	4	2.8	2.8	2.8	3.3	0	0
Wheat .....	Pound	---	---	---	---	---	---	2.3	2.3	2.3	2.7	0	0
Crackers, soda .....	Pound	29.0	28.9	29.1	---	6/	6/	3.6	3.7	3.6	---	-3	0
Corn flakes .....	12 ounces	25.8	25.7	25.6	17.1	6/	1	2.4	2.4	2.4	3.2	0	0
Corn meal .....	Pound	13.1	13.0	13.0	11.8	1	1	2.4	2.4	2.4	3.6	0	0
Flour, white .....	5 pounds	55.6	55.5	54.1	48.4	6/	3	17.6	18.3	17.8	21.0	-4	-1
Roller oats .....	18 ounces	22.1	22.0	20.4	14.5	9/	8	3.6	4.0	3.7	4.9	-10	-3
Apples .....	Pound	8/19.0	18.4	15.4	11.9	3	23	8/5.6	5.6	4/3.9	4.3	0	44
Grapefruit .....	Each	16.2	14.0	16.0	8.5	16	1	3.4	2.6	4/3.6	1.4	31	-6
Lemons .....	Pound	18.9	18.2	18.4	17.7	4	3	5.6	4.2	4/4.9	5.7	33	14
Oranges .....	Dozen	81.6	70.1	69.4	46.6	16	18	32.0	25.5	4/24.2	12.6	25	32
Beans, green .....	Pound	20.4	26.1	19.8	21.1	-22	3	9.2	10.3	8.7	9.3	-11	6
Cabbage .....	Pound	8.4	11.0	8.5	6.9	-24	-1	2.3	3.1	2.9	1.9	-26	-21
Carrots .....	Pound	15.4	13.2	14.3	11.1	17	8	4.9	3.3	4.0	4.0	48	23
Celery .....	Pound	14.1	13.4	14.1	---	5	0	4.7	3.7	4.2	---	27	12
Lettuce .....	Head	17.3	16.2	18.8	14.5	7	-8	5.0	5.4	6.8	6.3	-7	-26
Onions .....	Pound	9.9	9.7	9.8	8.4	2	1	2.9	2.8	2.6	3.7	4	12
Potatoes .....	10 pounds	71.4	81.4	69.1	51.9	-12	3	24.7	29.4	4/21.2	25.6	-16	17
Sweetpotatoes .....	Pound	8/15.8	13.6	14.6	11.6	16	8	8/4.1	4.4	4.4	4.8	-7	-7
Tomatoes .....	Pound	23.7	37.3	23.0	---	-36	3	9.0	13.3	7.7	---	-32	17
Orange juice, canned .....	46 ounce can	42.5	42.5	51.8	---	0	-18	13.2	13.1	20.2	---	1	-35
Peaches, canned .....	No. 2-1/2 can	33.7	33.6	35.6	31.5	6/	-5	5.4	5.5	5.8	5.3	-2	-7
Beans with pork, canned .....	16 ounce can	14.8	14.9	15.0	---	-1	-1	1.9	2.0	2.1	---	-5	-10
Corn, canned .....	No. 303 can	19.3	19.0	19.5	16.7	2	-1	2.3	2.3	2.3	2.7	0	0
Peas, canned .....	No. 303 can	21.0	20.3	20.3	21.4	3	3	3.0	3.0	3.0	3.0	0	0
Tomatoes, canned .....	No. 303 can	16.1	16.1	15.4	14.2	0	5	2.3	2.3	2.3	2.6	0	0
Orange juice concentrate, frozen	6 ounce can	22.1	22.1	26.2	---	0	-16	8.6	8.4	11.9	---	2	-28
Strawberries, frozen .....	10 ounces	26.7	26.4	26.2	---	1	2	7.4	7.0	6.7	---	6	10
Beans, green, frozen .....	9 ounces	23.0	23.0	22.7	---	0	1	4.3	4.3	4.3	---	0	0
Peas, frozen .....	10 ounces	20.0	19.8	19.9	---	1	1	3.2	3.2	3.1	---	0	3
Dried beans (navy) .....	Pound	16.5	16.7	17.3	19.9	-1	-5	5.4	5.7	5.9	9.7	-5	-8
Dried prunes .....	Pound	39.6	39.5	40.2	23.1	6/	-1	17.1	17.1	4/18.9	8.8	0	-10
Margarine, colored .....	Pound	26.8	26.8	27.7	39.7	0	-3	7.2	4/6.7	6.7	12.2	7	7
Peanut butter .....	Pound	55.6	55.4	55.6	---	6/	0	17.4	19.6	17.4	---	-11	0
Salad dressing .....	Pint	36.0	36.0	37.7	37.8	0	-5	6.3	6.1	6.1	10.0	3	3
Vegetable shortening .....	3 pounds	81.7	80.5	88.6	105.6	1	-8	25.3	4/24.0	24.4	46.2	5	4
Corn sirup .....	24 ounces	26.7	26.6	26.5	---	6/	1	3.0	3.0	3.2	---	0	-6
Sugar .....	5 pounds	58.4	57.3	57.3	48.4	2	2	20.4	20.4	20.5	19.4	0	6/

1/ The methods of calculation and the sources of price data are given in Part II of "Farm-Retail Spreads for Food Products," U. S. Dept. Agr. Misc. Pub. 741, 1957.

2/ Product groups include more items than those listed in this table. For example, the meat products group includes veal and lower grades of beef in addition to carcass beef of Choice grade, lamb, and pork.

3/ Gross farm value adjusted to exclude imputed values of byproducts obtained in processing.

4/ Most retail cost figures for April-June 1960 have been revised; figures in other columns revised as indicated.

5/ Sum of product groups may differ slightly from market-basket total because of rounding of averages.

6/ Less than 0.5 percent.

7/ Farm value of cream and milk only.

8/ 2-month average.



Table 11. - Farm food products: Farm-retail spread and farmer's share of the retail cost, July-September 1960, April-June 1960, July-September 1959 and 1947-49 average <sup>1/</sup>

Product 2/	Retail unit	Farm-retail spread 3/					Farmer's share				
		July-Sept.	Apr.-June	July-Sept.	1947-49	Percentage change	July-Sept.	Apr.-June	July-Sept.	1947-49	
		1960	1960	1959	average	July-Sept. 1960	1960	1960	1959	average	
		4/	4/	Apr.-June 1960	July-Sept. 1959	1960	1960	1959	1959		
		Dollars	Dollars	Dollars	Dollars	Percent	Percent	Percent	Percent	Percent	Percent
Market basket 5/		( 652.17	644.83	4/648.35	474.07	1	1	38	39	38	50
Meat products		( 136.24	127.51	4/136.54	85.18	7	6/	51	54	4/51	67
Dairy products		( 111.02	111.06	4/108.47	77.62	6/	2	44	44	4/44	54
Poultry and eggs	Average quantities purchased	( 34.88	33.41	4/ 36.80	36.32	4	- 5	61	62	58	69
Bakery and cereal products	per urban wage-earner and clerical-worker	( 137.54	134.81	4/133.62	86.99	2	3	17	17	17	29
All ingredients		( -----	-----	-----	---	--	--	13	13	13	20
Grain		( -----	-----	-----	---	--	--	13	13	13	20
All fruits and vegetables	family in 1952	( 166.23	172.14	4/164.72	123.75	- 3	1	30	4/30	4/30	33
Fresh fruits and vegetables		( 91.52	97.86	4/ 89.45	61.00	- 6	2	37	4/36	34	41
Fresh vegetables		( 45.36	50.87	4/ 45.63	30.20	-11	- 1	34	34	32	43
Processed fruits and vegetables		( 74.72	74.29	4/ 75.27	---	1	- 1	20	20	23	---
Fats and oils		( 29.29	29.29	4/ 32.02	32.37	0	- 9	28	27	25	38
Miscellaneous products		( 36.97	36.61	4/ 36.17	31.84	1	2	16	16	17	18
		Cents	Cents	Cents	Cents	Percent	Percent	Percent	Percent	Percent	Percent
Beef (Choice grade)	Pound	: 33.6	31.5	4/ 32.0	20.0	7	5	58	61	61	71
Lamb (Choice grade)	Pound	: 33.7	31.7	4/ 34.6	19.7	6	- 3	51	56	53	69
Pork (retail cuts)	Pound	: 28.3	26.5	4/ 30.6	19.7	7	- 8	52	53	47	67
Butter	Pound	: 21.6	21.8	4/ 22.5	20.1	- 1	- 4	71	71	70	75
Cheese, American process	1/2 pound	: 19.5	19.8	4/ 19.1	13.8	- 2	2	43	42	4/42	54
Ice cream	1/2 gallon	: 63.9	64.6	65.5	---	- 1	- 2	26	26	25	---
Milk, evaporated	1 1/2 ounce can	: 9.5	9.4	9.1	6.6	1	4	40	40	40	52
Milk, fluid	Quart	: 14.5	14.5	4/ 14.0	9.5	0	4	43	42	43	53
Chickens, frying, ready-to-cook	Pound	: 19.9	19.1	4/ 20.4	---	4	- 2	54	56	4/51	---
Eggs	Dozen	: 18.0	17.3	4/ 19.7	18.7	4	- 9	67	66	62	72
Bread, white											
All ingredients	Pound	: 17.7	17.3	16.9	10.2	2	5	14	14	14	24
Wheat	Pound	: ---	---	---	---	2	5	11	4/11	12	20
Crackers, soda	Pound	: 25.4	25.2	25.5	---	1	6/	12	13	12	---
Corn flakes	12 ounces	: 23.4	23.3	23.2	13.9	6/	1	9	9	9	19
Corn meal	Pound	: 10.7	10.6	10.6	8.2	1	1	18	18	18	31
Flour, white	5 pounds	: 38.0	37.2	36.3	27.4	2	5	32	33	33	43
Polled oats	18 ounces	: 18.5	18.0	16.7	9.6	3	11	16	18	18	34
Apples	Pound	: 7/13.4	12.8	4/11.5	7.6	5	17	7/29	4/30	4/25	36
Grapefruit	Each	: 12.8	11.4	4/12.4	7.1	12	3	21	19	4/23	16
Lemons	Pound	: 13.3	14.0	4/13.5	12.0	- 5	- 1	30	23	4/27	32
Oranges	Dozen	: 49.6	44.6	4/45.2	34.0	11	10	39	4/36	4/35	27
Beans, green	Pound	: 11.2	15.8	11.1	11.8	-29	1	45	4/39	44	44
Cabbage	Pound	: 6.1	7.9	5.6	5.0	-23	9	27	4/28	34	28
Carrots	Pound	: 10.5	9.9	10.3	7.1	6	2	32	25	28	36
Celery	Pound	: 9.4	9.7	9.9	---	- 3	- 5	33	28	30	---
Lettuce	Head	: 12.3	10.8	12.0	8.2	14	3	29	4/33	36	43
Onions	Pound	: 7.0	6.9	7.2	4.7	1	- 3	29	29	27	44
Potatoes	10 pounds	: 46.7	52.0	4/47.9	26.3	-10	- 3	35	4/36	31	49
Sweetpotatoes	Pound	: 7/11.7	9.2	10.2	6.8	27	15	7/26	4/32	30	41
Tomatoes	Pound	: 14.7	24.0	15.3	---	-39	- 4	38	4/36	33	---
Orange juice, canned	46 ounce can	: 29.3	29.4	31.6	---	6/	- 7	31	31	39	---
Peaches, canned	No. 2-1/2 can	: 28.3	28.1	29.8	26.2	1	- 5	16	16	16	17
Beans with pork, canned	16 ounce can	: 12.9	12.9	12.9	---	0	0	13	13	14	---
Corn, canned	No. 303 can	: 17.0	16.7	17.2	14.0	2	- 1	12	12	12	16
Peas, canned	No. 303 can	: 18.0	17.3	17.3	18.4	4	4	14	15	15	14
Tomatoes, canned	No. 303 can	: 13.8	13.8	13.1	11.6	0	5	14	14	15	18
Orange juice concentrate, frozen	6 ounce can	: 13.5	13.7	14.3	---	- 1	- 6	39	38	45	---
Strawberries, frozen	10 ounces	: 19.3	19.4	19.5	---	- 1	- 1	28	4/27	26	---
Beans, green, frozen	9 ounces	: 18.7	18.7	18.4	---	0	2	19	19	19	---
Peas, frozen	10 ounces	: 16.8	16.6	16.8	---	1	0	16	16	16	---
Dried beans (navy)	Pound	: 11.1	11.0	11.4	10.2	1	- 3	33	34	34	49
Dried prunes	Pound	: 22.5	22.4	4/21.3	14.3	6/	6	43	43	4/47	38
Margarine, colored	Pound	: 19.6	20.1	21.0	27.5	- 2	- 7	27	25	24	31
Peanut butter	Pound	: 38.2	35.8	38.2	---	7	0	31	35	31	---
Salad dressing	Pint	: 29.7	29.9	31.6	27.8	- 1	- 6	18	17	16	26
Vegetable shortening	3 pounds	: 56.4	56.5	64.2	59.4	6/	- 12	31	4/30	28	44
Corn sirup	24 ounces	: 23.7	23.6	23.3	---	6/	2	11	11	12	---
Sugar	5 pounds	: 38.0	36.9	36.8	29.0	3	3	35	36	36	40

<sup>1/</sup> The methods of calculation and the sources of price data are given in Part II of "Farm-Retail Spreads for Food Products," U. S. Dept. Agr. Misc. Pub. 741, 1957.

<sup>2/</sup> Product groups include more items than those listed in this table. For example, the meat products group includes veal and lower grades of beef in addition to carcass beef of Choice grade, lamb, and pork.

<sup>3/</sup> The farm-retail spread is the difference between the retail cost and the net farm value, table on opposite page.

<sup>4/</sup> Most farm-retail spread figures for July-Sept. 1960 have been revised, figures in other columns revised as indicated.

<sup>5/</sup> Sum of product groups may differ slightly from market-basket total because of rounding of averages.

<sup>6/</sup> Less than 0.5 percent.

<sup>7/</sup> 2-month average.

Table 12.- Farm food products: Retail cost, farm value of equivalent quantities sold by producers, byproduct allowance, farm-retail spread, and farmer's share of retail cost, July-September 1960 <sup>1/</sup>

Product <sup>2/</sup>	Farm equivalent	Retail unit	Retail cost	Gross farm value	Byproduct allowance	Net farm value	Farm-retail spread	Farmer's share
			Dollars	Dollars	Dollars	Dollars	Dollars	Percent
Market basket <sup>3/</sup> .....			1,057.17	---	---	405.00	652.17	38
Meat products .....			279.16	---	---	142.92	136.24	51
Dairy products .....			199.38	---	---	88.36	111.02	44
Poultry and eggs .....		Average quantities purchased per urban wage-earner and clerical-worker family in 1952	89.68	---	---	54.80	34.88	61
Bakery and cereal products	Farm produce equivalent to products bought by urban families		165.48	---	---	27.94	137.54	17
All ingredients .....			---	23.46	2.73	20.73	---	13
Grain .....			---	---	---	---	---	---
All fruits and vegetables			238.58	---	---	72.35	166.23	30
Fresh fruits and vegetables			144.78	---	---	53.26	91.52	37
Fresh vegetables .....			68.59	---	---	23.23	45.36	34
Processed fruits and vegetables .....			93.80	---	---	19.08	74.72	20
Fats and oils .....			40.73	---	---	11.44	29.29	28
Miscellaneous products .....			44.16	---	---	7.19	36.97	16
			Cents	Cents	Cents	Cents	Cents	Percent
Beef (Choice grade) .....	2.16 lb. Choice grade cattle	Pound	80.1	50.7	4.2	46.5	33.6	58
Lamb (Choice grade) .....	2.33 lb. lamb	Pound	69.0	40.7	5.4	35.3	33.7	51
Pork (retail cuts) .....	2.13 lb. hogs	Pound	59.1	35.8	5.0	30.8	28.3	52
Butter .....	Cream and whole milk	Pound	74.4	---	---	52.8	21.6	71
Cheese, American process .....	Milk for American cheese	1/2 pound	34.0	---	---	14.5	19.5	43
Ice cream .....	Cream and milk	1/2 gallon	86.4	---	---	4/22.5	63.9	26
Milk, evaporated .....	Milk for evaporating	14-1/2 ounce can	15.8	---	---	6.3	9.5	40
Milk, fluid .....	Wholesale fluid milk	Quart	25.4	---	---	10.9	14.5	43
Chickens, frying, ready-to-cook	1.37 lb. broilers	Pound	43.0	---	---	23.1	19.9	54
Eggs .....	1.03 doz.	Dozen	53.8	---	---	35.8	18.0	67
Bread, white								
All ingredients .....	Wheat and other ingredients	Pound	20.5	---	---	2.8	17.7	14
Wheat .....	.894 lb. wheat	Pound	20.5	2.5	.2	2.3	18.2	11
Crackers, soda .....	1.40 lb. wheat	Pound	29.0	4.0	.4	3.6	25.4	12
Corn flakes .....	1.57 lb. white corn	12 ounces	25.8	3.1	.7	2.4	23.4	9
Corn meal .....	1.34 lb. white corn	Pound	13.1	2.7	.3	2.4	10.7	18
Flour, white .....	7.0 lb. wheat	5 pounds	55.6	19.8	2.2	17.6	38.0	32
Polled oats .....	2.31 lb. oats	16 ounces	22.1	4.3	.7	3.6	18.5	16
Apples <sup>5/</sup> .....	1.03 lb. apples	Pound	19.0	---	---	5.6	13.4	29
Grapefruit .....	1.04 grapefruit	Each	16.2	---	---	3.4	12.8	21
Lemons .....	1.04 lb. lemons	Pound	18.9	---	---	5.6	13.3	30
Oranges .....	1.04 doz. oranges	Dozen	81.6	---	---	32.0	49.6	39
Beans, green .....	1.09 lb. snap beans	Pound	20.4	---	---	9.2	11.2	45
Cabbage .....	1.10 lb. cabbage	Pound	8.4	---	---	2.3	6.1	27
Carrots .....	1.06 lb. carrots	Pound	15.4	---	---	4.9	10.5	32
Celery .....	1.11 lb. celery	Pound	14.1	---	---	4.7	9.4	33
Lettuce .....	1.41 lb. lettuce	Head	17.3	---	---	5.0	12.3	29
Onions .....	1.06 lb. onions	Pound	9.9	---	---	2.9	7.0	29
Potatoes .....	10.42 lb. potatoes	10 pounds	71.4	---	---	24.7	46.7	35
Sweetpotatoes <sup>5/</sup> .....	1.12 lb. sweetpotatoes	Pound	15.8	---	---	4.1	11.7	26
Tomatoes .....	1.18 lb. tomatoes	Pound	23.7	---	---	9.0	14.7	38
Orange juice, canned .....	5.88 lb. Fla. oranges for canning	46 ounce can	42.5	---	---	13.2	29.3	31
Peaches, canned .....	1.89 lb. Calif. cling	No. 2-1/2 can	33.7	---	---	5.4	28.3	16
Beans with pork, canned .....	.35 lb. Mich. dry beans	16 ounce can	14.8	---	---	1.9	12.9	13
Corn, canned .....	2.49 lb. sweet corn	No. 303 can	19.3	---	---	2.3	17.0	12
Peas, canned .....	.69 lb. peas for canning	No. 303 can	21.0	---	---	3.0	18.0	14
Tomatoes, canned .....	1.84 lb. tomatoes for processing	No. 303 can	16.1	---	---	2.3	13.8	14
Orange juice concentrate, frozen	3.05 lb. Fla. oranges for frozen concentrated juice	6 ounce can	22.1	---	---	8.6	13.5	39
Strawberries, frozen .....	.51 lb. strawberries for processing	10 ounces	26.7	---	---	7.4	19.3	28
Beans, green, frozen .....	.71 lb. beans for processing	9 ounces	23.0	---	---	4.3	18.7	19
Peas, frozen .....	.70 lb. peas for freezing	10 ounces	20.0	---	---	3.2	16.8	16
Dried beans (navy) .....	1.00 lb. Mich. dry beans	Pound	16.5	---	---	5.4	11.1	33
Dried prunes .....	.97 lb. dried prunes	Pound	39.6	---	---	17.1	22.5	43
Margarine, colored .....	Soybeans, cottonseed, and milk	Pound	26.8	---	---	7.2	19.6	27
Peanut butter .....	1.77 lb. peanuts	Pound	55.6	---	---	17.4	38.2	31
Salad dressing .....	Cottonseed, soybeans, sugar, and eggs	Pint	36.0	---	---	6.3	29.7	18
Vegetable shortening .....	Soybeans and cottonseed	3 pounds	81.7	---	---	25.3	56.4	31
Corn sirup .....	1.90 lb. corn	24 ounces	26.7	3.6	.6	3.0	23.7	11
Sugar .....	37.97 lb. sugar beets	5 pounds	58.4	21.5	1.1	6/20.4	6/38.0	6/35

<sup>1/</sup> The methods of calculation and the sources of price data are given in Part II of "Farm-Retail Spreads for Food Products," U. S. Dept. Agr. Misc. Pub. 741, 1957.

<sup>2/</sup> Product groups include more items than those listed in this table. For example, the meat products group includes veal and lower grades of beef in addition to carcass beef of Choice grade, lamb, and pork.

<sup>3/</sup> Market basket total may differ from sum of product group totals because of rounding of averages.

<sup>4/</sup> Includes farm value of cream and milk only.

<sup>5/</sup> Two-month average.

<sup>6/</sup> Net farm value adjusted for Government payments to producer was 25.0 cents; farm-retail spread adjusted for Government processor tax was 35.3 cents; farmer's share of retail cost based on adjusted farm value was 43 percent.





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